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A Market Demand Analysis for Outdoor Recreation Opportunities on the St. Croix Waterway

Amulet Consulting Ltd.
February, 1987

A MARKET DEMAND ANALYSIS
FOR
OUTDOOR RECREATIONAL OPPORTUNITIES
ON THE
ST. CROIX WATERWAY

PREPARED FOR

DEPARTMENT OF TOURISM, RECREATION AND HERITAGE

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Introduction

CHAPTER 1: INTRODUCTION

1.0 INTRODUCTION

1.1 BACKGROUND

In June 1982 the Province of New Brunswick designated, by an Order-in-Council under the Community Improvement Corporation Act, the St. Croix River Basin, including the Chiputneticook Lake System and the St. Croix River, as the St. Croix Waterway Recreation Area (SCWRA). At the same time, the Order-in-Council established a New Brunswick Inter-Departmental Management Committee to coordinate provincial government initiatives in the area.

When, in January 1984, the Canadian federal government officially launched the Canadian Heritage Rivers System (CHRS), Tourism New Brunswick forwarded the St. Croix River for further study and nomination as a Canadian Heritage River. Based on the CHRS St. Croix River Background Study (Anonymous, 1984) prepared in 1983-84 by the Community Improvement Corporation and Tourism New Brunswick with the assistance of DPA Consulting Ltd., the St. Croix River was deemed to have outstanding natural, historical and recreation values and was, therefore, worthy of nomination to the CHRS. The St. Croix River was officially nominated as a Canadian Heritage River on June 19, 1984.

Officially accepted as a candidate as a Canadian Heritage River, New Brunswick was allowed three years to develop a management plan to conserve and enhance the St. Croix River's resources and "outstanding Canadian values." To this end, under the direction of the Management Committee, the Province has completed several major studies including archaelogical surveys and testing, ecological surveys, floral surveys, a recreational waterway inventory and a proposed development plan.

At this same time, the State of Maine was similarly recognizing the special nature of the St. Croix River and the Chiputneticook Lakes. In the Maine River's Study (Anonymous, 1982), the St. Croix River was singled out because of its status as an international boundary. In 1983 the Maine Legislature officially gave the St. Croix River special consideration under the Maine Rivers Act which itemized provisions controlling the development of new hydro-electric dams and thus impact on the Rivers resources.

As an international boundary, the St. Croix River has been managed in part by the International Joint Commission (IJC) which has operated since 1912 in accordance with the agreed rules and principles as set out in the 1909 Boundary Waters Treaty. The IJC's principal functions are, however, primarily regulatory regarding the use, obstruction and diversion of waters on either side of the international boundary, investigative and surveillance/coordination. In 1986, recognizing the need for coordinated, cooperative bilateral management of the St. Croix River Basin, the New Brunswick and Maine governments signed a joint agreement establishing the St. Croix International Waterway Commission to manage recreation, wildlife, fisheries and development of the St. Croix River and associated chain of lakes and the immediate shoreline.

While commercial forest harvesting has been the traditional primary land use activity throughout the Basin, the Waterway and, to a lesser extent, the surrounding land base have long been favoured recreational areas for both New Brunswickers and Maine residents. In developing a bilateral management plan for the St. Croix River Basin, recreation should play an important role as an essential and valued waterway and land-based activity. In addition, in accordance with the Guidelines for the Preparation of The Canadian Heritage Rivers System Management Plan, (Anonymous, 1980), the St. Croix River management plan yet to be prepared for the CHRS must be "an action plan which provides for the preservation, conservation, recreation and other use of the river and its adjacent land resources," and "should indicate recreation initiatives and facilities which are desirable for the river corridor" (Anonymous, 1980:3,14).

To facilitate the realistic development and management of recreational opportunities as a viable component of the overall management plan and to control the intensity of recreational use so as to ensure the preservation of recreational resources, it is important to identify current recreational uses and users. To this end, this study was initiated.

1.2 STUDY PURPOSE

From the terms of reference, the purpose of this study was to conduct a market demand analysis for recreational opportuntities along the St. Croix River and Chiputneticook Lake System (hereafter, the St. Croix Waterway throughout this report) and on lands immediately adjacent to and on both sides of the Waterway. This study was to directly focus on water-based recreational activities such as canoeing, shoreline camping, fishing and swimming, although some consideration was to be given to land-based activities such as hunting and hiking.

1.3 STUDY OJECTIVES

From the terms of reference, the study objectives were:

1. To measure the current recreational uses of the Waterway including types of use, amount and distribution of use.

2. To develop comprehensive user profiles of current recreational users including their use of other products (e.g., Allagash River, St. John River, etc.).

3. To assess recreational visitor satisfaction with existing recreational opportunities along the Waterway and visitor preferences/demand for future recreational development of both the Waterway and the immediate service region as well as management alternatives which may be necessary to ensuring the quality of the existing opportunity.

4. To determine future recreational demand for the St. Croix River and Chiputneticook Lake System.

5. To ascertain the potential of expanded use of the St. Croix Waterway and to identify specific prospective target markets and similar competitive products in the Maritime and Northeastern New England area.

1.4 STUDY METHODS

This study was jointly undertaken by the Quebec Labrador Foundation/Atlantic Centre for the Environment of Ipswich, Massachusetts and Amulet Consulting Ltd. of Fredericton, New Brunswick. There were four phases to the study:

Phase I: Study Design
Phase II: Data Collection
Phase III: Computer Analysis
Phase IV: Report Preparation

The Atlantic Centre for the Environment was responsible or Phases II and III and Amulet Consulting Ltd. was responsible for Phases I and IV.

1.4.1 Study Design

Prior to this study, there had been no reliable measures of recreational use along the St. Croix Waterway. For this reason, and to achieve the objectives of this study, four main steps were undertaken:

1. A thorough review of all material, earlier studies and briefs pertinent to the study area.

2. Data collection on the amount, type and distribution of recreational use and on the socio-economic characteristics of the users by means of;

   i) a mail survey of residents whose permanent and/or seasonal residences were located directly on or within easy walking distance of the Waterway,

   ii) a mail survey of commercial outfitters/lodge operators whose businesses were located directly on or near the Waterway, and

   iii) field interviews with summer recreational visitors who were not residents or commercial outfitters/lodge operators.

3. Analysis of all data collected.

4. Determination of the potential and future demand for recreational opportunities on the St. Croix Waterway and identification of specific prospective target markets including a telephone survey with a random sample of travel agents throughout the Maritimes and Northeastern New England areas to estimate the demand for wilderness vacation packages.

1.4.2 Study Definitions

Waterway Residents: those persons owning permanent and/or seasonal residences with private access to the Waterway or within easy walking distance.

Permanent Waterway Residents: those persons living permanently along the Waterway.

Seasonal Waterway Residents: those persons owning seasonal residences along the Waterway.

Permanent and Seasonal Waterway Residents: those persons owning both permanent and seasonal residences along the Waterway.

Local Users: those recreational visitors whose permanent residence was within close proximity of the study area but not directly on the Waterway or within easy walking distance. MAP III illustrates the demarcation for determining local visitors.

Non Local Users: those recreational visitors whose permanent residence was outside the local users boundary (see MAP III).

1.5 ORGANIZATION OF THE REPORT

This report is organized on the basis of current recreational uses and users and potential and future recreational use. Section II of the report provides the data on current recreational use by the three distinct user groups: Waterway residents, commercial outfitters/lodge operators and summer recreational visitors.

Section III analyses the latent, potential and future demand for recreation opportunities on the St. Croix Waterway, the prospective target markets and the competition.

Section VI presents the study conclusions and recommendations.

CHAPTER 2: THE ST. CROIX WATERWAY

2.0 THE ST. CROIX WATERWAY

2.1 THE ST. CROIX RIVER BASIN: LOCATION AND AREA

The St. Croix River Basin is located in the southwestern portion of New Brunswick and the southeastern corner of Maine (MAP I). It is an area which is defined geographically by two contiguous but distinct zones: the St. Croix River and the Chiputneticook Lake System. Throughout the entire length, both the river and the lakes serve a major role as the natural, cultural, political and international boundary between Canada and the United States.

2.2 THE STUDY AREA DEFINED

For the purposes of this study the study area was defined as the water area and adjacent shoreline on both sides of the St. Croix Waterway extending from its headwater tributary, Monument Brook, through the Chiputneticook Lakes and down the main stem of the River to the towns of Calais, Maine and St. Stephen, New Brunswick.

Because the Province of New Brunswick has designated specific boundaries for the St. Croix Waterway Recreation

SURVEY SITES

From MAP I

1	North Lake Provincial Park
2	Butterfield Landing
3	Rideouts
4	Red Bank
5	Spednic Lake Road
6	Greenland Cove Camps
7	Greenland Cove Campground
8	Greenland Point
9	Forest City
10	Forest City Landing
11	Spruce Mountain Landing
12	Palfrey Lake Lodge
13	Spednic Lake Provincial Park
14	St. Croix/Vanceboro
15	Little Falls
16	Beaconsfield Road
17	Loon Bay - Canadian
18	Loon Bay - American
19	Gleason Point
20	Grand Falls Dam
21	Squirrel Point
22	Princeton Bridge
23	Woodland
24	St. Stephen/Calais

Area (SCWRA), these are also noted here for reference only (MAP II). This study, however, was restricted to water-based recreational activities occurring directly within the study area: only minor attention was given to land-based activities throughout the entire SCWRA.

2.3 OVERVIEW OF THE STUDY AREA AND THE ST. CROIX RIVER BASIN

Numerous studies have already examined the history, major site characteristics and human heritage of the St. Croix River Basin. For the purposes of this report, this section highlights certain aspects of the Basin and, more specifically, of the study area that may have an impact on both the current and future recreational demand, preferences and activity patterns for the St. Croix Waterway. These highlights are more precisely detailed in the CHRS St. Croix River Background Study (Anonymous, 1984), the Proposed Development Plan for the St. Croix Waterway Recreation Area (Anonymous, 1983), the Long Term Management Plan for the Diadromous Fisheries of the St. Croix River (Anonymous, 1985), the St. Croix Waste Load Allocation (Mitnik, 1986), and the St. Croix River Basin Phase II Draft Report (Anonymous, 1982).

2.3.1 Major Site Characteristics

The most outstanding feature of the St. Croix River Basin is the abundance of lakes, ponds, rivers and streams, whose waters cover approximately ten percent (10%) of the basin area. The study area itself can be readily defined geographically by the two contiguous but distinctively different aquatic zones.

A consequence of the intense glacial activity during the Ice Age is the expansive, interconnected Chiputneticook Lake system consisting of North, Grand, Spednic and Palfrey Lakes which occupy nearly one-fifth of the entire St. Croix drainage area and have a major effect on the flows of the St. Croix River. These lakes offer spectacular landscape, expansive views and vistas and rocky shoreline. All the Chiputneticook Lakes are shallow and situated parallel to the prevailing wind resulting in higher wave forms than normal for lakes of this size. The lake bottoms, particularly in Grand and Spednic Lakes, are studded with massive dark gray granite boulders situated almost immediately below the surface, a situation which can readily contribute to danger for unknowing boaters especially in storm conditions.

The East Branch of the St. Croix River (MAP I) originates in the Chiputneticook Lake system flowing northerly through Mud Lake then southeasterly through Spednic Lake to St. Croix/Vanceboro then on approximately 87 km to tidewater at St. Stephen/Calais. Recreationists, however, generally consider the river as beginning at the St. Croix/Vanceboro dam. From this point to tidewater, there are essentially two river zones: the upper section of the River from St. Croix/Vanceboro to the Grand Falls Dam and the lower river from Grand Falls Dam to tidewater.

The upper section of the River stretches approximately 40 km from the St. Croix/Vanceboro to the Grand Falls Dam and offers a meandering variety of fast current to exciting rapids, most notably at Little Falls, to still water as the recreationist approaches Grand Falls Flowage. This section of the river is most popular with canoeists who need but a minimum of white water experience to enjoy this scenic, semi-wilderness, normally two-day trip where evidence of non-recreational use is minimal.

Grand Falls Flowage was created by the construction of Grand Falls Dam near Kellyland (MAP III). The headwater of the Flowage is the West Branch (MAP I) of the River which lies totally in Maine and is a series of lakes separated by short thoroughfares or streams. The two Branches of the River join at Grand Falls to form the main stem.

From the Grand Falls Dam to tidewater, the River stretches approximately 40 km and is primarily dead-water following a fairly straight and uniform course. Few canoeists proceed through this lower section of the River.

2.3.2 Natural Resources

The St. Croix River Basin is, in general, a post-maturely dissected lowland whose topography has evolved from and been considerably modified by glaciation and on-going fluvial processes. Both the extensive lake-river systems throughout the Basin and the flat or generally rolling plains which rise less than a hundred meters above the lakes are conspicuous features of the region. The landscape offers a "diverse blend of rolling wooded hills, vast marshes, expansive lakes and spectacular granite glaciated deposits" (Anonymous, 1986:4) in the lake district to rugged upland throughout the length of the St. Croix River.

A large portion of the St. Croix River Basin is semi-wilderness. Extensive forests of second-growth hardwoods and conifers cover eighty percent (80%) of the drainage. Vegetation in the Chiputneticook Lake System is representative of the Acadian Forest region and varies from mixed species forest to open pasture, scrub, and brush. The diverse flora throughout the study area, including thirteen rare plants, offers a truly enjoyable setting for outdoor recreational pursuits.

The St. Croix Waterway and adjacent lands support a diversity of wildlife. Not surprisingly, the excellent habitat has resulted in healthy populations of deer, moose, black bear, a variety of fur bearers and uplands game.

The St. Croix Waterway is, however, not inherently suitable for the production of waterfowl due to excessively shallow water depths, adverse topography and insufficient soil/water nutrients. Ducks Unlimited have a number of projects underway in the vicinity of the study area and it is expected that these projects will contribute to waterfowl habitat potential and, hence, to an increase in waterfowl populations.

A variety of bird species is found throughout the Waterway. Most notable are the endangered bald eagle and the more abundant osprey, which can frequently be sighted.

The Waterway offers excellent fishing opportunities for both warm and cold water fish species. Smallmouth bass, landlocked salmon, lake trout, white perch, pickerel and brook trout are all found throughout the study area.

2.3.3 Historical/Human Heritage Resources

The study area and adjacent lands proffer significant and atypical historical/human heritage resources of archaeological significance.

Although some archaeological sites have been entirely lost or reduced due to the construction of dams and subsequent fluctuations in the water level over the years, limited preliminary research has revealed numerous sites which will be invaluable in interpreting the long-ago history, culture and development of the area and its peoples.

2.3.4 Recent History

Prior to early European settlement, the St. Croix Waterway played a critical role as the primary trading route and settlement area for early native peoples in southwestern New Brunswick and southeastern Maine. With the 19th century lumbering boom, the Basin was increasingly settled and the Waterway became the economic lifeline of the lumber industry.

It was during this lumbering boom that the St. Croix Waterway's long history of dams began (MAP III). The numerous dams were of many sizes and in some cases were built, rebuilt or modified over time. Today, nearly thirty dams are still in existence, and their uses are mainly power generation, water storage, lake level regulation or waterfowl management.

Commercial forest harvesting and forest product processing continue to be the primary economic activities and subsequently, the primary employers in the area. Forested lands are, by far, the dominant land cover type throughout the Basin and most of this land including much of the Waterway's shoreline is owned by the Georgia-Pacific Company which harvests pulpwood and lumber at numerous harvesting sites.

Today, the St. Croix River Basin is sparsely populated with approximately 22,000 people of which nearly 75% live between Calais and Baileyville in Maine and in St. Stephen, New Brunswick. The study area, particularly north of Grand Falls Dam, continues, therefore to be remote and sparsely populated.

2.3.5 Historical Recreational Use

Recreational use of the Waterway has changed dramatically during the past twenty-five (25) years. For many years, the Waterway was used almost exclusively and, very successfully, by commercial fish and game outfitters. During the 50's and 60's, for a variety of reasons, increasing numbers of permanent and particularly, seasonal residences were constructed all along the Waterway, but particularly throughout the Chiputneticook Lakes. Today, North, East Grand and Palfrey Lake support extensive cottage developments and, hence, recreational patterns and preferences are static, water-edged oriented (e.g., powerboating, swimming, picnicking, etc.) (Whittingham and Weyman, 1984:177). Spednic Lake, the longest of the lakes, has less cottage development and, hence, the greatest potential for recreational development for the transient visitor (e.g. canoeists). The River itself supports very few private residences because it is not as suited to the static water-edged recreational activities generally preferred by cottage and lake shore residents. The River has traditionally been used by waterway travellers, particularly canoeists, seeking a moving current and challenging rapids with lesser evidence of civilization (Whittingham and Weyman, 1984:179).

2.4 OUTDOOR RECREATION ATTRIBUTES AND LIMITATIONS

The St. Croix Waterway "possesses a combination of recreational opportunities and related natural values which together provide a capability for an outstanding recreational experience." (Anonymous, 1984:82). Recreational attributes and limitations of the St. Croix Waterway have been well documented in the CHRS St. Croix River Background Study (Anonymous, 1984), the Proposed

Development Plan for the St. Croix Waterway Recreation Area (Anonymous, 1983), and the Recreational Waterway Inventory, St. Croix Recreation Area (Whittingham and Wevman, 1984). This study elects only to highlight these opportunities and limitations in order to both better orient the reader to the study area and to emphasize the potential for outdoor recreational opportunities provided by the Waterway.

2.4.1 Accessibility

The St. Croix Waterway is readily accessible by air or highway to the major population centres of northeastern North America. The entire populations of New Brunswick and Maine are within six hours driving time as are other major urban centres such as Halifax, Boston, Quebec City and Montreal. Most of the densely populated region of the American northeastern seaboard is within one day's driving time. While these populations mean a potential market of approximately seven (7) million Canadians (i.e., New Brunswick, Nova Scotia, Prince Edward Island and Quebec) and twenty four (24) million Americans (i.e., New England States), it is unlikely, however, that the study area could sustain pressure from this large a base.

The Waterway is directly linked to its major sources of users, New Brunswick and Maine residents, via Highway 4 from McAdam and Highway 122 from Canterbury in New Brunswick and via Highway 6 from Topsfield, Maine and at various points along Maine Highway 1 (MAP I). Internal circulation along the Waterway and throughout most of the Basin is limited to many miles of well-developed logging roads which are, however, not consistently reliable, not well-signed and often confusing. Generally, only Waterway residents and local area visitors are knowledgeable of the network of forest roads and the access points to the water.

Although the Waterway is not inaccessible, its limited accessibility does assist in controlling the degree of recreational use and, hence, heightening the semi-wilderness recreational experience as well as contributing to minimal negative recreational impact on the environment.

2.4.2 Location Relative to Other Recreational Areas

Crown land in both New Brunswick and Maine has traditionally provided residents with a wealth of semi-wilderness recreational opportunities. Rich with lakes, game, fish and scenic vistas, more and more people are rapidly discovering the potential of these lands for outdoor recreation.

At present, the Bathurst Pilot Project and Mt. Carleton Provincial Park in New Brunswick are the only areas of provincial Crown land offering semi-wilderness primitive service recreation in a semi-controlled setting. Similar opportunities are also available to some extent at both Kouchibouguac and Fundy National Parks. There are, of course, other favoured semi-wilderness recreational areas/routes favoured by residents, primarily for canoeing and fishing (eg., the Miramichi, Upper Saint John, Tobique Rivers, etc.) but these are not managed nor controlled specifically for recreational use.

In Maine the Allagash, Kennebec, Dead and Penobscot Rivers attract hundreds of canoeists, rafters and kayakers each week from April through to September. These waterways are managed and controlled cooperatively by local businesses and canoe clubs and the Maine Central Power Corp. expressly for whitewater travellers. In addition, numerous well-developed parks throughout the State, most notably, Baxter State Park, Acadia National Park, White Mountain National

Forest and the Appalachian Trail offer superb semi-wilderness recreational opportunities with excellent hiking trail systems.

2.4.3 The Landscape

The St. Croix Waterway is "an outstanding example of river environments as they are affected by the major stages and processes in the earth's evolutionary history ... of significant on-going fluvial, geomorphological and biological processess ... " and " contains along its course unique, rare or outstanding examples of natural phenomena, formations or features, or areas of exceptional natural beauty ..." (Anonymous, 1984:77-78) which all serve to maximize the recreational experience.

At the present time the Waterway supports current recreational use with negligible impact on its natural, historical or aesthetic values (Anonymous, 1984:83). Previous studies have concluded that the study area is "considered a relatively stable and tolerant environment with good regenerative capacity" (Whittingham and Weyman 1984:204) and that "increased use would not result in significant environmental impact" (Anonymous, 1984:83) assuming, of course, low-scale development of the study area and recreational use managed in a manner that will minimize environmental impact. While there are instances of "serious" biotic damage by recreationists, they are primarily a result of irresponsible user behavior which can be combatted by education, management and maintenance (Whittingham and Wevman, 1984:205).

2.4.4 Contiguous Water Bodies

Possibly the most distinctive feature of the Waterway is the contiguous nature of the Waterway which is not readily found in Canada or the northeastern United States (Anonymous, 1983:11) and more than anything else, contributes to the Waterway's appeal to recreationists, primarily canoeists and anglers, who can follow diverse routes or find isolated sites within a relatively concentrated area. In addition, long distance canoe tripping routes originating from the St. Croix Waterway have potential for development (Whittingham and Wevman, 1984:184). If properly managed, the contiguous nature of the Waterway can be capitalized upon to assist in controlling the distribution of recreational use throughout the study area.

2.4.5 Water Quality

Water quality in the Chiputneticook Lake System and the upper portions of the river is excellent. (Anonymous, 1985:7) and fish-rearing potential is good. There has, however, been some minor deterioration in upstream areas largely due to sedimentation, log deposition, silting from logging and road construction and minor pollution by small communities and increased numbers of seasonal residents on the water's edge.

The quality of the water in the lower main stream was allowed to deteriorate in the 1950's and 1960's to the point of virtual exclusion of fish life. Construction of municipal and industrial waste water treatment facilities has resulted in improved water quality and the subsequent re-establishment of many fish species. Ten miles of the river below the Georgia-Pacific mill at Woodland, Maine continues to constitute a water quality limited segment, however.

2.4.6 Historical/Human Heritage Attributes

The study area's rich history and numerous unique and rare archaeological sites offer wonderful interpretive opportunities for maximizing the recreational visitors' enjoyment and knowledge of the Waterway's heritage.

2.4.7 Conflicts With Other Resource Users

One of the most outstanding features of the study area and one of the most vital to a quality semi-wilderness recreation experience is the lack of permanent population and the relatively few settlement features. Certainly there are a few highways/roads which touch the Waterway directly, a vast network of forest access roads, and numerous permanent/seasonal residents/lodges with direct access to the Waterway, particularily throughout the lake district, but it is still possible to find both moments and spaces of solitude and semi-wilderness.

As previously mentioned, the Chiputneticook Lakes, with the exception of Spednic Lake, have undergone a tremendous proliferation of cottage development during the past twenty-five (25) years. Recreational use of the lakes is primarily by permanent/seasonal Waterway residents and local area visitors for static water-edged recreational activities and occasionally for day-use activities (conditional water travellers) (Whittingham and Weyman, 1984:178). As a consequence, Waterway recreational users tend to subdivide naturally into the lake users seeking the more social forms of recreation and the river users seeking the more independent, isolated forms of recreation. Fortunately, the Waterway naturally allows for both types of recreational use and, hence, mitigates most conflicts between user groups. There is, however, some potential for conflict between user groups, particularly along the River where drive-in camping/picnicking sites encourage encounters between waterway travellers and drive-in visitor parties (Whittingham and Weyman, 1984:168).

Lands adjacent to the Waterway are primarily consigned to industrial forest harvesting which is not particularly evident to the amatuer observer except from the network of roads surrounding the study area and along the lower reaches of the river where water quality degradation, biological impacts from poor water management practices and local stream deterioration resulting from large clearcutting operations are a direct result of vast forest harvesting throughout the Basin.

2.4.8 Water Elevations and Flow Rates

The St. Croix Waterway is completely regulated by dams and, with the exception of the St. Stephen/Calais Salmon Falls Dam, Georgia Pacific controls the water levels throughout the entire Waterway for both power generation and sale and for industrial forest operations.

In past years, water level fluctuation has been a source of frustration to recreational users of the Waterway particularly cottage/camp owners, canoeists, anglers and outfitters. Although current minimum waterlevels were established under the provisions of the Boundary Waters Treaty (1909), these standards are inadequate for consistent, reliable and satisfactory recreational experiences.

In the early 1970's, in response to complaints by seasonal water users, a study of the water management scheme for Spednic Lake identified increased boating hazards, detrimental fishery impacts, loss of commercial outfitter income, decreased cottage access, shoreline erosion and water supply disruption as the major effects of the current management scheme (Gordon, 1985:np). A "rule-curve" of operation was adapted for use throughout the entire

Waterway to maintain certain minimum flows throughout the year with a ninety five percent (95%) reliability.

Despite the "rule-curve" operation complaints by non-industrial users of the Waterway still abound. Water level fluctuations continue to limit cottage/camp access and reduce angling success due to detrimental effects on fish behavior, physiology, habitat, spawning bed abandonment, forage competition, predation, evironmental stress, and water quality. It is expected that waterflows and elevations will fluctuate more frequently in the future than ever before, thereby directly affecting the quality, type and reliability of the recreational experience (Whittingham and Weyman, 1984:186).

In a 1985 study entitled Water Level Control in the St. Croix River System Including Spednic Lake it was recommended by Environment New Brunswick that "The Province of New Brunswick should request an IJC review of the existing regulation and "rule-curve" of operation. Any recommendations for change ... designed to protect the future of the fishery and other resource assets of the area, and to truly meet the needs of the non-industrial Waterway users". (Gordon, 1985:np). Waterway elevations and flow rates can be managed more effectively to allow for both consistently maximizing the recreational experience and ensuring Georgia Pacific is able to reserve water and meet its industrial requirements. In their Recreational Waterway Inventory (1984), Whittingham and Weyman recommended elevation and flow standards which if adopted would go a long way towards making the Waterway, particularly the River, a significant economic and recreational resource capable of competing with other area waterways (e.g., Allagash, Kennebec, Dead, Penobscot, and the upper St. John Rivers).

2.4.9 Specific Recreational Activity Opportunities

The St. Croix Waterway readily allows for and can support a variety of outdoor recreational opportunities.

Alternative canoeing/boating experiences can be had on both the Chiputneticook Lakes and the St. Croix River from early spring to late fall. The Lakes offer circuitous lake tripping for canoeists as well as excellent opportunities for sailboating, motorboating and sailboarding primarily by lakeshore residents. Generally higher wave forms than normal for lakes this size and large granitic boulders just below the lake surface, primarily in the East Grand and Spednic Lakes, require caution, especially by large motorboats.

The River is primarily a novice and lower intermediate river offering a variety of excellent linear canoeing experiences. The upper section of the River, from Vanceboro to Little Falls is Class I and II water but during the prime season it offers Technical I and II water with Volume II flows. Little Falls to Grand Falls Dam presents both the greatest frequency and variety of white water in some stretches as well as flat stretches depending upon flow rates. Grand Falls Dam to Woodland is an easy, steady drop but from Woodland to St. Stephen can be found the greatest extremes of water conditions of the entire river (Whittingham and Weyman, 1984:148).

Angling has long been a popular activity throughout the Waterway attracting both local area residents and tourists for primarily the smallmouth bass, landlocked salmon and brook trout. Southwestern New Brunswick is, in fact, considered to be one of the best smallmouth bass fishing areas in New Brunswick and is of tremendous interest to American anglers. Efforts by both the Canadian and American governments have been directed during recent years to improving the angling in both the Waterway and other Basin lakes and streams through pollution abatement programs, better fish passageways, stocking and improved spawning and nursery areas.

There are a number of private and public campgrounds on both sides of the Waterway as well as both designated and unofficial primitive campsites along the shoreline and on islands. The primitive campsites are all accessible by water and a few are accessible by road: a potentially conflicting situation. All campsites have been well documented in the Recreational Waterway Inventory (Whittingham and Weyman 1984). There are, however, limited facilities for the non-Waterway residents static water-edge users. Existing drive-in recreational day-use/ campsites are few in number, not well-known, difficult to reach and not well-suited to the tourist and family camping user.

Site use consequently is primarily day-use by shoreline residents and guide/outfitter guests and, weekend and holiday use by local area visitors and overnight accommodation use by Waterway travellers.

The St. Croix Waterway offers superb opportunities for the more passive non-consumptive forms of outdoor recreation: nature study, bird watching and photography. Its unique landscape and scenic vistas and the presence of numerous rare plants, the endangered bald eagle, and the osprey will appeal to the serious and the amateur nature observer alike.

2.4.10 Management of the St. Croix Waterway

Unfortunately, unlike similar multiple-use areas (eg., Quetico Provincial Park - Boundary Waters Canoe Areas), there has been no specific management plan and associated policies for the St. Croix Waterway to ensure maintenance of the semi-wilderness setting. It has only been within the past few years that the New Brunswick and Maine governments have recognized the incredible natural, historical, aesthetic and recreational values of the Waterway and have directed efforts toward the development of a management plan that will equally accommodate recreational-environmental and commercial resource users and mitigate potential resource conflicts.

SECTION II: CURRENT (1986) RECREATIONAL DEMAND FOR THE ST. CROIX WATERWAY

Current (1986) Recreational Demand for the St. Croix Waterway

CHAPTER 3: CURRENT DEMAND FOR OUTDOOR RECREATION OPPORTUNITIES ON THE ST. CROIX WATERWAY

3.0 CURRENT DEMAND FOR OUTDOOR RECREATION OPPORUNTITIES IN THE ST. CROIX WATERWAY

3.1 OUTDOOR RECREATION DEMAND

The demand for outdoor recreation opportunities is increasing throughout North America and forecasts predict even greater demands in the future. Countless Canadian and American studies forewarn of increasing populations, urbanization, disposable income, and leisure time to name but a few of the many factors that will be reflected in an intensified demand for outdoor recreational opportunties.

As the demand for wilderness/semi-wilderness outdoor recreational opportunities increases, our resources will be stressed, often to the point of irreparable damage, and the recreational experience will rapidly deteriorate. Without complete and constant recreational demand data, planners and policy makers are all too frequently forced to speculate the demands for outdoor recreation based upon observation-based estimates. Such speculation can seriously hamper recreational planning, resource allocation and wise resource management.

There are no recreational demand data for the St. Croix Waterway whatsoever. In 1984 there was a minor attempt to conduct a Waterway visitor survey but this was completely unsuccessful. Local residents believe there is tremendous use of the Waterway, however. In 1982, it was estimated by a Vanceboro resident, "who keeps unofficial count, that some 6000 people (mostly belonging to clubs of U.S. origin) used the river" (Anonymous, 1983:19). All estimates are, however, observation-based and not, therefore, reliable. Nor are such estimates sufficiently comprehensive to provide valuable information such as travel patterns, visitor profiles, recreational activity preferences, occasions when facilities and resources are subjected to heavy pressure by recreationists or user satisfaction with recreational opportunties.

3.2 CURRENT (1986) OUTDOOR RECREATION DEMAND ON THE ST. CROIX

This study represented the first methodical approach to estimating recreational demand for the St. Croix Waterway. Field work was designed to provide a practical and accurate means of achieving the study's objectives and to be complementary with similar work undertaken in New Brunswick (i.e., the Department of Forest, Mines and Energy's 1977 recreational demand analysis for the Bathurst Pilot Project and, more specifically, the Department's recent Crown land recreational use survey).

There were a number of factors which limited or affected to varying degrees the study methods. Firstly, late start-up approval of this study considerably reduced preparatory time for comprehensive study area analysis and for the study design itself. Secondly, budget and time restraints confined field work to the period May 17 to September 1 and weekends in September. It was assumed that the late spring and summer are the seasons of greatest recreational use and, therefore, the seasons during which maximum pressure is exerted on the resources and facilities. Thirdly, the St. Croix Waterway is a recreational area for Waterway residents, local area Maine and New Brunswick residents as well as non-local residents and non-resident users. Various federal, provincial/state government departments and bilateral agencies are interested in and involved in management of the study area, thereby, increasing and complicating the demand for recreational use data. Lastly, there were no reliable historical demand data upon which to base this study or to assist in the research design (i.e., identifying maximum user entry/exit points).

3.2.1 Target Population

The target population for this study was all recreational users to the study area. Three survey populations were defined on the basis of distinct user groups:

1. Waterway residents (permanent and/or seasonal) whose residence/camp/cottage had private access to the Waterway or who lived in close proximity (easy walking distance)(e.g., Vanceboro, St. Croix, Forest City, etc.).

2. Commercial outfitters and lodge operator/owners with private access to the Waterway or those in close proximity to the Waterway who conducted a good deal of their business along the Waterway.

3. All other recreational visitors to the Waterway, including local area Maine and New Brunswick residents and non-local visitors (see MAP III).

It was assumed that Waterway residents and commercial outfitters and lodge operator/owners were frequent users of the Waterway. For this reason, these two groups were surveyed in September via a mail-back questionnaire based on total recreational use of the study area for the preceding year. A personal interview questionnaire was used with a sample of all other recreational users to obtain the necessary data for this third group. Survey methods are further detailed in Chapters 4,5 and 6.

3.2.2 Data Collection in the Field

A field crew of Atlantic Centre for the Environment (ACE) staff were in the study area during the study period, May 17 to September 1st inclusive and September weekends, to conduct the personal interviews with recreational visitors to the study area excluding Waterway residents and commercial outfitters and lodge operators/owners.

3.2.3 Data Processing

The questionnaires from all three user groups were designed with coded values. The Field Project Leader was responsible for ensuring that all questionnaires had been accurately completed. Any questionnaires improperly completed or incomplete were discarded.

Data was totally numeric and entered in fixed block format for use with SPSS-X (mainframe).

3.2.4 Presentation of Data

Because there were three distinct user groups and different data collection techniques, this section of the report is organized such that the data collected for each user group is presented in Chapters 4, 5 and 6. Chapter 7 presents user profiles for each of the user groups.

CHAPTER 4: RESIDENT RECREATIONAL USE OF THE ST. CROIX WATERWAY

4.0 RESIDENT RECREATIONAL USE OF THE ST. CROIX WATERWAY

4.1 STUDY METHODS

There are numerous permanent and seasonal residents whose homes, cottages or camps have direct, private access to the St. Croix Waterway. In addition, there are a number of residents who live in small communities (e.g., St. Croix, Vanceboro, Fosterville, Forest City, etc.) or on roads within easy walking distance of the Waterway. Early in the survey period, it became readily apparent that many of these residents use the Waterway on a daily basis. For example, many residents may visit the Waterway two or three times a day for swimming or fishing. It was assumed that seasonal residents, while not perhaps daily users of the Waterway, were, in all probability, frequent visitors to their camps/cottages. For these reasons, a sample of both permanent and seasonal resident households were surveyed in September via a mailback questionnaire (APPENDIX I). Information collected in this questionnaire was similar to that collected from the personal interview questionnaires with other recreational users (See Chapter 6) but was based on total recreational visitation to the study area for the period September 1, 1985 to August 31, 1986.

While data collected for this user group was for one full year, the questionnaire was designed to provide seasonal use data as well: Fall: September 1 - December 31, 1985; Winter: January 1 - March 31, 1986; Spring: April 1 - May 31, 1986; and Summer: June 1 - August 31, 1986. It was possible, therefore, to compare recreational use by residents with use by the other two user groups.

Residents were identified from state and provincial tax assessment records. A fifty percent (50%) sample was made of all Waterway residents listed on New Brunswick tax assessment records and fifty percent (50%) from Maine tax assessment records. In New Brunswick 265 property owners were identified and 133 received a questionnaire. In Maine 513 property owners were identified and 257 received a questionnaire. It should be noted that not all Waterway residents living in Calais and St. Stephen were included in this sample, only those with property with private access to the Waterway.

It was not possible to differentiate between permanent and seasonal residents prior to the mailout but this was a question on the questionnaire.

The questionnaire was completely confidential. No personal information was retained which could identify any individual or party. Survey results were reported as aggregated responses only.

Survey results are estimates from the survey responses of a sample of resident households. These values are only estimates of the true values for the total resident (permanent and seasonal) population which could only be determined through a census of all residents.

4.2 WATERWAY RESIDENT RECREATIONAL USE OF THE ST. CROIX WATERWAY

Of the 390 questionnaires mailed to Waterway resident households, 180 responded for an excellent 46.2% response rate. This response represents 23.1% of all property owners on both sides of the Waterway.

4.3 RESIDENT PROFILE

4.3.1 Location of Waterway Residence

Of all residents on both sides of the Waterway, 34.1% own property in New Brunswick and 65.9% own property in Maine. Of those who responded to the survey, 68 or 37.8% owned property in New Brunswick and 112 or 62.2% owned property in Maine.

4.3.2 Type of Residence

It was not possible to differentiate by type of residence prior to mailing out the questionnaire. Of all respondents, 153 or 85.6% were seasonal residents, 15 or 7.8% owned both permanent and seasonal residences and only 12 or 6.7% were permanent residents. Based on field observations by the Atlantic Centre for the Environment (ACE) summer field crew (see Chapter 6), it is likely that this ratio of permanent to seasonal to permanent and seasonal residents is relatively accurate for property owners on both sides of the Waterway.

4.3.3 Permanent Residence of Seasonal Waterway Residents

Most New Brunswick seasonal residences are owned by New Brunswickers primarily from York and Carleton Counties (Table 4.1). Although the majority of seasonal residences located on the Maine side of the Waterway are owned by Maine residents (55.5%), fully one-third (34.0%) are owned by residents of other states.

It should be noted that far more Americans own seasonal residences in New Brunswick (25%) than do Canadians who own seasonal residences in Maine (0.9%).

4.3.4 Private Access to the Waterway

The majority (81.1%) of property owners along the Waterway have private access (Table 4.2). Not surprisingly, more seasonal residents have private access than do permanent residents, many of whom live in the small communities of Fosterville, Forest City, St. Croix, Vanceboro or along roads close to the Waterway.

4.3.5 Means of Transportation to the Waterway

Most Waterway residents use a car, truck or van to travel to the Waterway, particularly seasonal residents who drive

TABLE 4.1: Location of permanent residence of seasonal Waterway residents (in percent of respondents).

Location of Permanent Residence	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
CANADA						
New Brunswick						
Fredericton	1.7	4.4	-		1.9	-
Saint John	0.6	1.5	-		0.6	-
Charlotte Co.	2.2	5.9	-		1.9	7.1
Kings Co.	1.1	2.9	-		1.3	-
Sunbury Co.	1.1	2.9	-		1.3	-
York Co.	6.1	14.7	0.9		4.5	28.6
Carleton Co.	9.4	25.0	-		10.4	7.1
Westmorland Co.	0.6	1.5	-		0.6	-
Ontario	1.7	4.4	-		1.3	7.1
UNITED STATES						
Maine						
Androscoggin Co.	1.7	-	2.7	-	1.9	-
Aroostook Co.	16.7	4.4	24.1	-	19.5	-
Cumberland Co.	3.3	1.5	4.5	-	3.9	-
Hancock Co.	0.6	1.5	-	-	0.6	-
Kennebec Co.	2.8	-	4.5	-	3.2	-
Knox Co.	0.6	-	0.9	-	0.6	-
Oxford Co.	0.6	-	0.9	-	0.6	-
Penobscot Co.	5.6	-	8.9	-	6.5	-
Sagadahoc Co.	0.6	-	0.9	-	0.6	-
Somerset Co.	1.1	-	1.8	-	1.3	-
Waldo Co.	0.6	-	0.9	-	0.6	-
Washington Co.	3.9	1.5	5.4	-	2.6	21.4
York Co.	1.1	2.9	-	-	1.3	-
New Hampshire	3.3	-	5.4	-	3.9	-
Massachusetts	4.4	1.5	6.3	-	5.2	-
Connecticut	4.4	-	7.1	-	5.2	-
Rhode Island	0.6	-	0.9	-	0.6	-
New York	2.8	2.9	2.7	-	3.2	-
New Jersey	2.2	4.4	0.9	-	2.6	-
Other States	8.3	4.4	10.7	-	9.7	-
No Response	10.6	11.8	9.8	100.0	1.9	28.6
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

TABLE 4.2: Access to St. Croix Waterway by citizenship and by type of residence.

Access to Waterway	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Private access	81.1	79.4	82.1	50.0	82.5	92.9
No private access	17.8	19.1	17.0	50.0	16.2	7.1
No response	1.1	1.5	0.9	-	1.3	-
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

to their camp/cottage (Table 4.3). Surprisingly, few permanent residents walk to the Waterway despite their proximity, possibly because their favourite fishing/ swimming spot is not readily convenient to their residence.

4.3.6 Drinking Water Used by Seasonal Waterway Residents

The majority of seasonal Waterway residents either carry in their own drinking water (37.2%) or have a private well (32.2%) (Table 4.4).

4.3.7 Occupation of Waterway Residents

Approximately half (47.1%) of all Waterway residents are "white collar" workers, 31.7% are retired and 16.8% are "blue collar" workers (Table 4.5). Not surprisingly, more permanent (41.7%) and permanent and seasonal residents (50.0%) are retired than are seasonal residents (29.2%).

4.3.8 Number of Weeks Annual Vacation of Waterway Residents

Of those Waterway residents who are not retired, the majority (44.9%) have three or more weeks annual vacation (Table 4.6).

Table 4.3: Means of transportation to the St. Croix Waterway by Waterway residents (in percent of respondents).

		Location of Residence		Residence Type		
	All Respondents	New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Car	59.4	58.8	59.8	33.3	63.0	42.9
Truck/van	31.1	27.9	33.0	33.3	29.9	42.9
Recreational vehicle	1.1	2.9	-	8.3	0.6	-
Jeep/dune buggy	3.3	2.9	3.6	-	2.6	14.3
Walked	1.1	1.5	0.9	8.3	0.6	-
No response	3.9	5.9	2.7	16.7	3.2	-
	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 4.4: Camp drinking water used by seasonal Waterway residents between September 1, 1985 and August 31, 1986 (in percent of respondents).

Drinking Water Source	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Private well	32.2	41.2	26.8	-	34.4	28.6
Untreated lake/ river water	16.7	10.3	20.5	-	18.8	7.1
Boiled lake/ river water	7.2	2.9	9.8	-	7.8	7.1
Lake/river water treated with purification tablets	1.1	-	1.8	-	1.3	-
Carried in water	37.2	36.7	37.5	-	39.0	42.9
Spring water	16.1	11.8	18.8	-	17.5	14.3
Other	1.7	4.4	-	-	2.0	-

* will not total 100.0% due to multiple responses

TABLE 4.5: Occupations of Waterway resident respondents (in percent).

		Location of Residence		Residence Type		
Occupation	All Respondents	New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Engineering and Science	3.9	4.4	3.6	-	4.5	-
Managerial	9.4	11.8	8.0	8.3	9.1	14.3
Law and Social Science	2.8	2.9	2.7	-	1.9	14.3
Teaching and Education	8.3	2.9	11.6	-	9.7	-
Medicine and Health	8.3	5.9	9.8	-	9.7	-
Religion	1.1	2.9	-	-	1.3	-
Arts and Literature	2.2	1.5	2.7	-	2.6	-
Clerical	1.7	1.5	1.8	-	1.9	-
Sales	4.4	5.9	3.6	8.3	4.5	-
Service	5.0	7.4	3.6	16.7	4.5	-
Forestry	2.2	2.9	1.8	8.3	1.3	7.1
Farming	1.1	1.5	0.9	-	1.3	-
Processing	0.6	-	0.9	-	0.6	-
Machining	3.3	2.9	3.6	-	3.9	-
Manufacturing	1.7	-	2.7	-	1.9	-
Construction	2.8	4.4	1.8	-	3.2	-
Transportation	3.3	1.5	4.5	-	3.2	7.1
Retired	31.7	29.4	33.0	41.7	29.2	50.0
Other	1.1	2.9	-		2.5	7.1
No Response	3.3	5.9	1.8	16.7	2.6	-
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

TABLE 4.6: Number of weeks annual vacation of Waterway resident respondents (in percent of respondents).

Number of Weeks Annual Vacation	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
1 week	1.1	2.9	-	-	1.3	-
2 weeks	6.7	4.4	8.0	8.3	7.1	-
3 weeks	9.4	14.7	6.3	16.7	9.7	9.4
4 weeks	15.0	16.2	14.3	-	17.5	-
5 weeks	8.3	11.8	6.3	8.3	5.8	35.7
6 weeks	3.9	-	6.3	-	4.5	-
7 weeks	1.1	1.5	0.9	-	1.3	-
8 weeks or more	8.3	4.4	10.7	-	9.7	-
Retired	36.7	30.9	40.2	8.3	1.3	7.1
No Response	9.4	13.2	7.2	25.0	7.8	14.2
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

4.3.9 Total Annual Family Income of Waterway Residents

Waterway residents whose income is in U.S. currency have higher total annual family incomes than do residents whose income is in Canadian currency regardless of the location of their residence or their residence type (Table 4.7).

4.3.10 Outdoor Recreation Club Memberships of Waterway Residents

Nearly two-thirds (64.4%) of all Waterway residents do not belong to any outdoor recreation club (Table 4.8). Permanent Waterway residents, however, belong to more clubs than do seasonal residents regardless of the location of their residence.

4.4 TOTAL AMOUNT OF RECREATIONAL USE BY WATERWAY RESIDENTS

4.4.1 Average Use per Waterway Resident Respondent

Table 4.9 summarizes by location and type of residence, the average number of visits to seasonal camps/cottages and average length of stay by seasonal Waterway residents, the average number of visits to the Waterway by permanent resident respondents and average party size.

4.4.2 Total Waterway Resident Use

Based on the total number of Waterway resident households (778 households - see Section 4.1) and the estimated types of residences (see Section 4.3.2), Table 4.10 estimates, at a minimum, the total number of residents using the Waterway

TABLE 4.7: Total annual family income of Waterway residents (in percent of respondents).

Total Annual Family Income	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
CANADIAN CURRENCY						
Under $9,000	1.1	2.9	-	-	0.6	7.1
$ 9 - 19,999	5.6	11.8	1.8	-	5.8	7.1
$20 - 29,999	5.6	11.8	1.8	8.3	4.5	14.3
$30 - 39,999	3.9	5.9	2.7	-	3.2	14.3
Over $40,000	12.8	22.1	7.1	8.3	14.3	-
U.S. CURRENCY						
Under $9,999	3.9	-	6.3	16.7	2.6	7.1
$10 - 19,999	9.4	5.9	11.6	8.3	9.1	14.3
$20 - 29,999	11.1	10.3	11.6	16.7	10.4	14.3
$30 - 39,999	11.7	5.9	15.2	8.3	12.3	7.1
Over $40,000	17.2	5.9	24.1	18.8	14.3	17.2
No Response	17.8	17.8	17.9	33.3	18.1	-
	100.0*	100.0	100.0	100.0	100.0	

* may not total 100.0% due to rounding

TABLE 4.8: Club memberships of Waterway residents (in percent of respondents).

		Location of Residence		Residence Type		
Club Memberships	All Respondents	New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Canoe club	1.1	1.4	0.9	8.3	0.7	-
Rod and gun club	6.7	7.4	6.3	-	5.8	21.4
Naturalist/ conservation club	11.1	11.8	10.7	-	12.3	7.1
Fish and game club	11.1	10.3	11.6	8.3	12.3	-
Salmon club	2.8	2.9	2.7	16.7	2.0	-
Other	5.6	2.9	7.1	8.3	5.2	7.1
None of the above	64.4	64.7	64.3	41.7	66.9	57.1

* will not total 100.0% due to multiple responses

TABLE 4.9: Average number of visits, average length of stay and average party size of Waterway residents (in percent of resident respondents).

Season	Average number of visits by seasonal Waterway residents	Average length of stay of seasonal Waterway residents	Average total number of days visiting the Waterway by permanent Waterway residents	Average number of people per party
NEW BRUNSWICK RESIDENTS				
Fall*	5.0	6.1	7.1	2.5
Winter*	1.8	2.0	9.5	1.6
Spring*	3.3	5.5	5.5	2.4
Summer*	5.6	21.8	16.6	4.4
MAINE RESIDENTS				
Fall	3.1	7.8	33.5	2.5
Winter	1.5	1.1	17.5	1.6
Spring	2.4	6.5	17.4	2.4
Summer	4.8	24.1	40.9	4.9
PERMANENT RESIDENTS				
Fall	N/A**	N/A	23.7	1.7
Winter	N/A	N/A	16.2	1.6
Spring	N/A	N/A	14.5	2.0
Summer	N/A	N/A	26.7	3.7
SEASONAL RESIDENTS				
Fall	3.8	7.2	N/A	2.6
Winter	1.6	1.5	N/A	1.5
Spring	2.7	6.4	N/A	2.4
Summer	4.8	24.3	N/A	4.6
PERMANENT AND SEASONAL RESIDENTS				
Fall	3.7	7.6	13.1	2.9
Winter	1.8	1.0	10.0	2.2
Spring	3.2	3.5	7.0	3.1
Summer	7.7	13.1	25.6	6.2
TOTAL: ALL RESIDENTS				
Fall	3.8	7.2	17.9	2.5
Winter	1.6	1.4	12.8	1.6
Spring	2.7	6.1	10.3	2.4
Summer	5.1	23.3	26.5	4.7

* Fall: Sept. 1 - Dec. 1, 1985
Winter: Jan. 1 - March 31, 1986
Spring: April 1 - May 31, 1986
Summer: June 1 - Aug. 31, 1986

** not applicable

TABLE 4.10: Estimated total recreational use by all Waterway residents.

Season	Total number of visits by seasonal Waterway residents[1]	Total number of days visiting the Waterway for recreation by permanent Waterway residents[2]	Total number of resident recreational users of the Waterway[3]	Total number of recreation days consumed by Waterway residents[4]
PERMANENT RESIDENTS				
Fall[5]	N/A[9]	1,209	2,055	2,055
Winter[6]	N/A	826	1,322	1,322
Spring[7]	N/A	740	1,480	1,480
Summer[8]	N/A	1,362	5,039	5,039
Total	N/A	4,137	9,896	9,896
SEASONAL RESIDENTS				
Fall	2,496	N/A	6,490	46,725
Winter	1,067	N/A	1,601	2,401
Spring	1,803	N/A	4,327	27,693
Summer	3,378	N/A	15,538	377,593
Total	8,744	N/A	27,956	454,412
PERMANENT AND SEASONAL RESIDENTS				
Fall	226	799	1,025	7,790
Winter	110	610	720	720
Spring	195	427	622	2,177
Summer	470	1,562	2,032	26,619
Total	1,001	3,398	4,399	37,306
TOTAL: ALL RESIDENTS				
Fall	2,722	2,008	9,570	56,570
Winter	1,177	1,436	3,643	4,443
Spring	1,998	1,167	6,429	31,350
Summer	3,848	2,924	22,609	409,251
Total	9,745	7,535	42,251	501,614

[1] Total number of visits by Seasonal Waterway residents = average number of visits by seasonal Waterway residents X total number of seasonal Waterway residents.

[2] Total number of days visiting the Waterway by permanent Waterway residents = average total number of days visiting the Waterway by permanent Waterway residents X total number of permanent Waterway residents.

[3] Total number of recreational users = total number of days visiting the Waterway X average party size.

[4] Total number of recreation days consumed by Waterway residents = total number of recreation users X average length of stay*

* Assumed to be 1 day for permanent Waterway residents.

[5] Fall: Sept. 1 - Dec. 31, 1985

[6] Winter: Jan. 1 - Mar. 31, 1986

[7] Spring: Apr. 1 - May 31, 1986

[8] Summer: June 1 - Aug. 31, 1986

[9] N/A: not applicable

for recreational purposes and the total number of recreation days consumed. For the period studied, September 1, 1985 to August 31, 1986, seasonal Waterway residents made an estimated 9,745 visits to the Waterway and permanent residents spent an estimated 7,535 days visiting the Waterway. Based on the average length of stay and average party size, there were an estimated 42,251 resident recreational users of the Waterway consuming slightly more than a half million (501,614) recreation days.

Recreational use of the Waterway is predominantly by seasonal residents who make up 66.2% of all users but consume 90.6% of all recreation days (Table 4.11). Permanent residents make up 23.4% of all users but consume only 2.0% of all recreation days compared with permanent and seasonal residents who make up only 10.4% of all users but consume 7.4% of all recreation days.

Recreational use of the Waterway occurred overwhelmingly (81.6%) during the summer season (Table 4.11) with only 11.3% of all recreation days being consumed during the fall, 6.3% during the spring and only 0.9% during the winter. As expected, the distribution of recreational use by permanent Waterway residents is very different to that of seasonal residents. Permanent residents consumed half of their recreation days in the summer, 20.8% during the fall,

TABLE 4.11: Percent of estimated total recreational use by type of resident.

Season	Percent of total number of recreational visits by seasonal Waterway residents	Percent of total number of days visiting the Waterway for recreation by permanent Waterway residents	Percent of total number of resident recreational users of the Waterway	Percent of total number of recreation days consumed by Waterway residents
PERMANENT RESIDENTS				
FALL[1]	N/A	29.2	20.8	20.8
WINTER[2]	N/A	20.0	13.4	13.4
SPRING[3]	N/A	17.9	15.0	15.0
SUMMER[4]	N/A	32.9	50.9	50.9
% of TOTAL	N/A	54.9	23.4	2.0
SEASONAL RESIDENTS				
FALL	28.5	N/A	23.2	10.3
WINTER	12.2	N/A	5.7	0.5
SPRING	20.6	N/A	15.5	6.1
SUMMER	38.6	N/A	55.6	83.1
% of TOTAL	89.7	N/A	66.2	90.6
PERMANENT AND SEASONAL RESIDENTS				
FALL	22.6	23.5	23.3	20.9
WINTER	11.0	17.9	16.4	1.9
SPRING	19.5	12.6	14.1	5.8
SUMMER	47.0	46.0	46.2	71.4
% of TOTAL	10.3	45.1	10.4	7.4
TOTAL: ALL RESIDENTS				
FALL	27.9	26.6	22.7	11.3
WINTER	12.1	19.1	8.6	0.9
SPRING	20.5	15.5	15.2	6.3
SUMMER	39.5	38.8	53.5	81.6
TOTAL	100.0*	100.0	100.0	100.0

[1] Total number of visits by seasonal Waterway residents = average number of visits by seasonal Waterway residents X total number of seasonal Waterway residents.

[2] Total number of days visiting the Waterway by permanent Waterway residents = average total number of days visiting the Waterway by permanent Waterway residents X total number of permanent Waterway residents.

[3] Total number of recreational users = total number of days visiting the Waterway X average party size.

[4] Total number of recreation days consumed by Waterway residents = total number of recreation users X average length of stay.*

*Assumed to be 1 day for permanent Waterway residents.

[5] FALL: Sept. 1 - Dec. 31, 1985

[6] WINTER: Jan. 1 - Mar. 31, 1986

[7] SPRING: Apr. 1 - May 31, 1986

[8] SUMMER: June 1 - Aug. 31, 1986

[9] N/A: not applicable

* may not total 100.0% due to rounding

15.0% during the spring and 13.4% during the winter. Seasonal resident use, however, is nearly all during the summer (83.1% of all recreation days consumed) with only 10.3% of all recreation days consumed during the fall, 6.1% during the spring and only 0.5% during the winter.

4.5 RECREATIONAL ACTIVITY PARTICIPATION PATTERNS OF WATERWAY RESIDENTS

4.5.1 Recreational Activities Engaged In

Tables 4.12 and 4.13 summarize the recreational activities participated in by Waterway resident respondents by season (i.e., fall, winter, spring, summer) during the period September 1, 1985 to August 21, 1986. During the fall, residents primarily engaged in sightseeing/relaxing/ pleasure (43.9%) and hunting (39.4%). Ice fishing (30.6%) was the predominant winter activity. The majority of respondents participated in angling during the spring (55.0%) and summer (67.2%) months. Sightseeing/relaxing/ pleasure, boating and canoeing and swimming were also popular pastimes during these months.

4.5.2 Primary Recreational Activities

In keeping with the percent of respondents engaging in various seasonal activities, the primary recreational

TABLE 4.12: Recreational activities engaged in during the spring and summer seasons by Waterway residents during the period September 1, 1985 to August 31, 1986 (in percent of respondents).

			Location of Residence				Residence Type					
	All Respondents		New Brunswick		Maine		Permanent		Seasonal		Permanent & Seasonal	
	Spring*	Summer*	Spring	Summer	Spring	Summer	Spring	Summer	Spring	Summer	Spring	Summer
Sightseeing/ relaxing/pleasure	42.8	71.7	50.0	72.1	38.4	71.4	8.3	25.0	44.4	74.5	53.3	80.0
Canoeing	20.0	40.6	19.1	41.2	20.5	40.2	-	16.7	20.3	41.2	33.3	53.3
Canoeing with motor	4.4	8.3	1.5	2.9	6.2	11.6	8.3	8.3	2.0	6.5	26.7	26.7
Kayaking	0.6	2.2	1.5	2.9	-	1.8	-	-	0.7	2.6	-	-
Boating (no motor)	3.9	12.8	4.4	17.6	3.6	9.8	8.3	25.0	3.9	13.1	-	-
Boating with motor 9.9 hp or less	23.3	39.4	20.6	41.2	25.0	38.4	16.7	33.3	23.5	39.2	26.7	46.7
Boating with motor 10 hp or more	30.6	53.3	22.1	36.8	35.7	63.4	16.7	33.3	32.0	55.6	26.7	46.7
Camping	8.9	14.4	2.9	13.2	12.5	15.2	-	8.3	7.8	12.4	26.7	40.0
Angling	55.0	67.2	47.1	61.8	59.8	70.5	66.7	75.0	53.6	67.3	60.0	60.0
Hiking	11.7	23.3	14.7	26.5	9.8	21.4	-	8.3	12.4	24.2	13.3	26.7
Picnicking	7.8	25.0	4.4	26.5	9.8	24.1	-	-	8.5	26.8	6.7	26.7
Sailboating	3.3	14.4	2.9	10.3	3.6	17.0	-	8.3	3.3	16.3	6.7	-
Sailboarding	-	2.2	-	4.4	-	0.9	-	-	-	2.6	-	-
Birdwatching	18.3	27.8	25.0	32.4	14.3	25.0	8.3	8.3	19.6	29.4	13.3	26.7
Nature Study	7.8	12.2	8.8	16.2	7.1	9.8	-	-	8.5	12.4	6.7	20.0
Berrypicking	2.8	27.2	1.5	26.5	3.6	27.7	-	25.0	3.3	28.1	-	20.0
ATV's	5.6	9.4	4.4	10.3	6.2	8.9	8.3	16.7	4.6	7.8	13.3	20.0
Swimming	9.4	62.8	10.3	60.3	8.9	64.3	8.3	50.0	10.5	64.7	-	53.3
Waterskiing	2.2	22.8	2.9	16.2	1.8	26.8	-	25.0	2.6	22.9	-	20.0
Hunting	-	0.6	-	1.5	-	-	-	8.3	-	-	-	-
Ice Fishing	0.6	-	1.5	-	-	-	-	-	-	-	6.7	-
Snowmobiling	0.6	-	-	-	0.9	-	-	-	0.7	-	-	-
Other	5.0	3.3	7.4	4.4	3.6	2.7	-	-	5.2	3.3	6.7	6.7

*Spring: April, 1, 1986 to May 31, 1986
Summer: June 1, 1986 to August 31, 1986

TABLE 4.13: Recreational activities engaged in during the fall and winter seasons by Waterway residents during the period September 1, 1985 to August 31, 1986 (in percent of respondents).

	All Respondents		Location of Residence				Residence Type					
			New Brunswick		Maine		Permanent		Seasonal		Permanent & Seasonal	
	Fall*	Winter*	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter	Fall	Winter
Sightseeing/ relaxing/pleasure	43.9	17.2	52.9	26.5	38.4	11.6	16.7	8.3	47.1	16.3	33.3	33.3
Canoeing	15.6	-	19.1	-	13.4	-	8.3	-	16.3	-	13.3	-
Canoeing with motor	2.2	-	2.9	-	1.8	-	-	-	1.3	-	13.3	-
Kayaking	1.1	-	2.9	-	-	-	-	-	1.3	-	-	-
Boating (no motor)	4.4	-	11.8	-	-	-	-	-	5.2	-	-	-
Boating with motor 9.9 hp or less	18.5	-	26.5	-	13.4	-	8.3	-	19.0	-	20.0	-
Boating with motor 10 hp or more	17.8	-	14.7	-	19.6	-	16.7	-	17.6	-	20.0	-
Camping	3.9	1.7	5.9	-	2.7	2.7	8.3	-	3.3	1.3	6.7	6.7
Angling 27.7	28.3 -	0.6 41.7	29.4 -	1.5 28.1	0.7	20.0	-					
Hiking	17.8	3.9	10.3	4.4	6.2	3.6	8.3	8.3	6.5	3.9	20.0	-
Picnicking	6.1	-	7.4	-	5.4	2.7	-	-	6.5	1.3	6.7	6.7
Sailboating	3.3	-	4.4	-	2.7	-	8.3	-	3.3	-	-	-
Sailboarding	-	-	-	-	-	-	-	-	-	-	-	-
Birdwatching	13.3	3.9	20.6	7.4	8.9	1.8	8.3	16.7	13.7	2.6	13.6	6.7
Nature Study	6.1	1.7	8.8	1.5	4.5	1.8	-	-	6.5	2.0	6.7	-
Berrypicking	7.8	-	10.3	-	6.2	-	-	-	7.8	-	13.3	-

ATV's	6.1	3.3	7.4	2.9	5.4	3.6	-	8.3	5.2	2.0	20.0	13.3
Swimming	11.7	-	17.6	-	8.0	-	-	-	13.7	-	-	-
Waterskiing	2.2	-	5.9	-	-	-	-	-	2.6	-	-	-
Hunting	39.4	0.6	36.8	1.5	41.1	-	33.3	-	37.9	-	60.0	6.7
Cross Country skiing	1.1	13.9	1.5	23.5	0.9	8.0	-	33.3	1.3	11.8	-	20.0
Snowmobiling	2.2	20.6	1.5	20.6	2.7	20.5	-	16.7	1.3	16.3	13.3	66.7
Skating	1.1	13.9	1.5	19.1	0.9	10.7	-	25.0	1.3	13.1	-	13.3
Ice Fishing	1.1	30.6	-	25.0	1.8	33.9	-	25.0	0.7	29.4	6.7	46.7
Winter Camping	1.1	6.1	1.5	8.8	0.9	4.5	-	-	-	5.9	13.3	13.3
Snowshoeing	2.2	13.3	1.5	14.7	2.7	12.5	-	-	2.0	12.4	6.7	33.3
Other	6.1	5.0	7.4	10.3	5.4	1.8	8.3	16.7	5.9	3.9	6.7	6.7

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*Fall: September 1, 1985 to December 31, 1985
Winter: January 1, 1986 to March 31, 1986

activities by season were hunting (21.7%) and sightseeing/relaxing/pleasure during the fall, ice fishing, (16.1%) during the winter, angling (32.8%) in the spring and sightseeing/relaxing/pleasure (31.1%) in the summer (Table 4.14). It should be noted that 59.4% did not identify a primary activity during the winter presumably because most seasonal Waterway residents do not visit their cottage/camps during the winter and many permanent and permanent and seasonal residents simply do not participate in activities during the winter months.

4.5.3 Recreational Use of Lakes Within the St. Croix Waterway Recreation Area

Only 38.8% of all residents visited designated lakes within the St. Croix Waterway Recreation Area (SCWRA) within the study period (Table 4.15). Not surprisingly more residents with property in New Brunswick (48.5%) visited these inland lakes than did those who own property in Maine (33.0%). Seasonal residents were less likely to visit these lakes than were permanent residents (58.3%).

4.6 WATERWAY RESIDENT PARTY EXPENDITURES

4.6.1 Average Party Expenditures

Tables 4.16 and 4.17 summarize average party expenditures by seasonal (Table 4.16) and permanent (Table 4.17) Waterway residents by expenditure category and by location of expenditures.

TABLE 4.14: Primary recreational activities participated in by residents by season.

Primary Recreational Activity by Season	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
FALL (September 1, 1985-December 31, 1985)						
Sightseeing/ relaxing/ pleasure	20.0	27.9	15.2	-	21.4	21.4
Canoeing	1.1	-	1.8	8.3	0.6	-
Boating with motor 9.9 hr. or less	0.6	-	0.9	-	0.6	-
Boating with motor 19 hp +	0.6	-	0.9	-	0.6	-
Camping	0.6	-	0.9	-	0.6	-
Angling	10.0	2.9	14.3	25.0	9.7	-
Hiking	1.1	1.5	0.9	-	0.6	7.1
Sailboating	0.6	1.5	-	-	0.6	-
Birdwatching	1.1	2.9	-	-	1.3	-
Nature Study	0.6	1.5	-	-	0.6	-
Berry picking	0.6	-	0.9	-	0.6	-
ATV's	0.6	-	0.9	-	0.6	-
Hunting	21.7	19.1	23.2	25.0	19.5	42.9
Other	3.3	2.9	3.6	8.3	3.2	-
No Response	37.8	39.7	36.6	33.3	39.0	28.6
	100.0*	100.0	100.0	100.0	100.0	100.0
WINTER (January 1, 1986-March 31, 1986)						
Sightseeing/ relaxing/ pleasure	7.8	10.3	6.3	-	7.1	21.4
Canoeing	0.6	-	0.9	-	0.6	-
Nature Study	0.6	-	0.9	-	0.6	-
Cross Country Skiing	5.0	8.8	2.7	25.0	3.2	7.1
Snowmobiling	5.0	7.4	3.6	-	4.5	14.3
Ice Fishing	16.1	7.4	21.4	16.7	16.2	14.3

Winter Camping	1.1	1.5	0.9	-	1.3	-
Snowshoeing	0.6	-	0.9	-	0.6	-
Other	3.9	7.4	1.8	8.3	3.9	-
No Response	59.4	57.4	60.7	50.0	61.7	42.9
	100.0	100.0	100.0	100.0	100.0	100.0
SPRING (April 1, 1986- May 31, 1986)						
Sightseeing/ relaxing/ pleasure	15.0	20.6	11.6	-	15.6	21.4
Canoeing	0.6	-	0.9	-	0.6	-
Boating with motor 9.9 hp or less	0.6	-	0.9	-	0.6	-
Boating with motor 10 hp +	2.8	4.4	1.8	-	3.2	-
Camping	1.1	-	1.8	-	1.3	-
Angling	32.8	20.6	40.2	58.3	30.5	35.7
Hiking	1.1	2.9	-	-	1.3	-
Nature Study	1.1	1.5	0.9	-	1.3	-
Ice Fishing	0.6	1.5	-	-	-	7.1
Other	2.2	4.4	0.9	-	-	-
No Response	42.2	44.1	41.1	41.7	42.9	35.7
	100.0	100.0	100.0	100.0	100.0	100.0
SUMMER (June 1, 1986- August 31, 1986)						
Sightseeing/ relaxing/ pleasure	31.1	33.8	29.5	8.3	31.2	50.0
Canoeing	1.1	1.5	0.9	-	1.3	-
Boating with motor 9.9 hp or less	1.7	2.9	0.9	-	1.9	-
Boating with motor 10 hp or more	3.3	1.5	4.5	-	3.9	-
Camping	1.7	-	2.7	-	1.3	7.1
Angling	20.6	22.1	19.6	33.3	20.8	7.1
Hiking	0.6	-	0.9	-	0.6	-
Sailboating	1.1	1.5	0.9	-	0.6	7.1
Sailboarding	0.6	1.5	-	-	0.6	-

ATV's	0.6	-	0.9	-	0.6	-
Swimming	6.1	4.4	7.1	16.7	5.8	-
Waterskiing	0.6	-	0.9	-	0.6	-
No Response	31.1	30.9	31.3	41.7	30.5	28.6
	100.0	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding.

TABLE 4.15: Percent of Waterway resident respondents who visited designated New Brunswick inland lakes between September 1, 1985 and August 31, 1986.

New Brunswick Inland Lakes	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
First Eel Lake	2.2	5.9	-	-	2.0	7.1
Second Eel Lake	4.4	10.3	0.9	16.7	2.6	14.3
Skiff Lake	6.1	11.8	2.7	8.3	5.2	14.3
Grossy Lake	2.8	5.9	0.9	-	2.6	7.1
Moose Lake	0.6	1.5	-	-	0.7	-
Lake Anelia	1.1	2.9	-	-	1.3	-
Deer Lake	1.1	2.9	-	-	1.3	-
Pirate Lake	1.1	1.5	0.9	8.3	0.7	-
Riley Lake	1.1	1.5	0.9	8.3	0.7	-
Third Eel Lake	1.7	4.4	-	-	2.0	-
La Coote Lake	3.9	4.4	3.6	16.7	3.3	-
Cranberry Lake	1.7	4.4	0.0	-	2.0	7.1
Sixth Lake	2.8	5.9	0.9	-	2.6	7.1
Fifth Lake	3.3	7.4	0.9	-	3.3	14.3
Bolton Lake	6.1	13.2	1.8	16.7	4.6	7.1
Musquash Lake	4.4	8.8	1.8	8.3	3.9	-
Parker Lake	0.6	1.5	0.0	-	0.7	7.1
Greenland Lake	2.2	2.9	1.8	8.3	1.3	-
Turtle Lake	3.3	5.9	1.8	8.3	3.3	7.1
East Brook Lake	2.8	5.9	0.9	8.3	2.0	7.1
First Lake	1.7	1.5	1.8	-	1.3	7.1
Third Lake	1.1	1.5	0.9	-	0.7	7.1
Modsley Lake	1.1	2.9	-	-	0.7	7.1
McAdam Lake	2.2	4.4	0.9	-	2.0	7.1
Tomilson Lake	0.0	-	-	-	-	-
Pleasant Lake	1.1	1.4	0.9	-	0.7	7.1
None of the Above	61.2	51.5	67.0	41.7	63.0	57.1

TABLE 4.16: Average expenditures by seasonal Waterway resident parties per visit by currency for the period June 1, 1986 to August 31, 1986.

EXPENDITURE CATEGORY	Total Average Expenditures	Average Expenditures by Location				
		Local Maine	Maine	Local New Brunswick	New Brunswick	Else-where
CANADIAN CURRENCY						
Transportation	$12.36	$0.58	$0.32	$8.18	$3.32	$0
Accommodation	0.20	0	0	0	0	0.20
Food and Beverage in Restaurants	3.90	0.28	0.06	1.68	1.88	0
Food and Beverage in Stores	27.60	1.68	0.10	5.16	15.25	5.38
Outdoor Recreation Expenditures	3.04	0.38	0.16	1.81	0.71	0
Outfitter/Guide Services	0	0	0	0	0	0
Recreational Equipment	2.64	0.05	0	0.86	1.73	0
Rental Equipment	0	0	0	0	0	0
Miscellaneous Merchandise	2.19	0.05	0.03	0.98	1.13	0
Improvements Maintenance	21.21	0.21	0	10.9	6.90	3.18
Total Expenditures	$73.14	$3.23	$0.67	$29.57	$30.91	$8.76
AMERICAN CURRENCY						
Transportation	$35.75	$10.93	$8.63	$2.12	$1.06	$13.02
Accommodation	3.96	0.39	0.66	0.20	0.42	2.29
Food and Beverage in Restaurants	11.88	5.30	2.87	0.92	1.18	1.61
Food and Beverage in Stores	61.08	31.87	12.91	7.84	3.63	4.82
Outdoor Recreation Expenditures	17.36	12.03	1.24	1.93	0.32	1.84
Outfitter/Guide Services	1.34	0.41	0	0.93	0	0
Recreational Equipment	10.34	2.69	4.60	0.45	0	2.60
Rental Equipment	0.26	0.04	0	0.15	0.06	0
Miscellaneous Merchandise	7.08	4.02	1.11	0.67	0.48	0.78
Improvements/Maintenance	99.83	38.17	26.23	9.08	4.34	22.00
Total Expenditures	$248.88	$105.88	$58.25	$24.29	$11.49	$48.96

TABLE 4.17: Average expenditures by permanent Waterway resident parties per visit by currency for the period June 1, 1986 to August 31, 1986.

EXPENDITURE CATEGORY	Average Expenditure per party per visit	Average Expenditures by Location				
		Local Maine	Maine	Local New Brunswick	New Brunswick	Else-where
CANADIAN CURRENCY						
Accommodation	$1.38	$0.52	$0	$0	$0.86	$0
Food and Beverage in Restaurants	0	0	0	0	0	0
Food and Beverage in Stores	0.86	0	0	0.86	0	0
Outdoor Recreation Expenditures	7.14	0.26	0	3.45	3.44	0
Outfitter/Guide Services	0	0	0	1.89	0.34	0
Recreational Equipment	0	0	0	0	0	0
Rental Equipment	0	0	0	0	0	0
Miscellaneous Merchandise	0.34	0	0	0.34	0.34	0
Total Expenditures	$11.96	$0.78	$0	$6.20	$4.98	$0
AMERICAN CURRENCY						
Transportation	$1.25	$0.33	$0.92	$0	$0	$0
Accommodation	6.11	4.58	0	1.53	0	0
Food and Beverage in Restaurants	4.27	3.05	0.61	0.62	0	0
Food and Beverage in Stores	9.62	7.79	1.53	0.30	0	0
Outdoor Recreation Expenditures	10.26	7.51	1.53	1.23	0	0
Outfitter/Guide Services	3.97	3.05	0	0.92	0	0
Recreational Equipment	0.68	0.38	0.30	0	0	0
Rental Equipment	0.66	0.35	0	0.30	0	0
Miscellaneous Merchandise	2.84	1.61	0.92	0.30	0	0
Total Expenditures	$39.66	$28.65	$5.81	$5.20	$0	$0

Seasonal Waterway residents spending Canadian currency spent an estimated $73 per visit to their camp/cottage while those spending American currency spent an average $248 per visit. Total estimated expenditures per party for the entire period June 1 to August 31, 1986 was $409 for parties spending Canadian currency compared with $1,194 for those parties spending American currency. This difference in average party expenditures over the entire season is partially due to the location of the permanent residence of seasonal residents (see Section 4.3.3 and Table 4.1).

Permanent Waterway residents spending Canadian currency spent $11.96 per visit or an estimated $198 for the entire period June 1 to August 31, 1986, as compared with those spending American currency who spent $39.66 per visit or an estimated $1,624 over the entire summer period.

4.6.2 Estimated Total Waterway Resident Expenditures

Table 4.18 and 4.19 estimate minimum total recreational expenditures by all permanent and seasonal Waterway residents during the period June 1 to August 31, 1986.

At a minimum it was estimated that all Waterway residents spending Canadian currency spent $73,400. Seasonal residents accounted for 95.4% of these expenditures compared with permanent residents who accounted for only 4.6% of all expenditures. Waterway residents spending American currency spent an estimated $641,800. 91.4% of these expenditures were by seasonal residents compared with 8.6% by permanent residents.

TABLE 4.18: Estimated minimum total expenditures by seasonal Waterway resident households by currency for the period June 1, 1986 to August 31, 1986.

Expenditure Category	Total Average Expenditures per Seasonal Resident Party	Average Expenditures by Location				
		Local Maine	Maine	Local New Brunswick	New Brunswick	Else-where
CANADIAN CURRENCY						
Transportation	$11,843	$543	$289	$7,838	$3,172	$0
Accommodation	189	0	0	0	0	189
Food and Beverage in Restaurants	3,726	253	49	1,614	1,809	0
Food and Beverage in Stores	26,402	1,610	100	4,948	14,605	5,153
Outdoor Recreation Expenditures	2,912	357	150	1,723	680	0
Outfitter/Guide Services	0	0	0	0	0	0
Recreational Equipment	1,534	49	0	825	1,658	0
Rental Equipment	0	0	0	0	0	0
Miscellaneous Merchandise	2,101	49	25	945	1,080	0
Improvements/Maintenance	20,318	201	0	10,460	6,614	3,042
Total Expenditures	70,045	3,066	615	28,356	29,620	8,385
AMERICAN CURRENCY						
Transportation	$84,265	$25,767	$20,342	$4,993	$2,499	$30,662
Accommodation	9,338	923	1,556	486	972	5,401
Food and Beverage in Restaurants	28,001	12,495	6,765	2,165	2,769	3,805
Food and Beverage in Stores	143,951	75,118	30,427	18,495	8,558	11,351
Outdoor Recreation Expenditures	40,919	28,360	2,931	4,571	731	4,325
Outfitter/Guide Services	3,157	972	0	2,184	0	0
Recreational Equipment	24,378	6,338	10,846	1,070	0	6,122
Rental Equipment	608	103	0	363	142	0
Miscellaneous Merchandise	16,689	9,491	2,626	1,581	1,144	1,846
Improvements/Maintenance	235,287	89,980	61,841	21,387	10,207	51,869
Total Expenditures	586,597	249,698	137,288	57,250	27,024	115,385

TABLE 4.19: Estimated minimum total expenditures by all permanent Waterway resident households visiting the Waterway for recreation purposes by currency for the period June 1, 1986 to August 31, 1986.

EXPENDITURE CATEGORY	Total Average Expenditures	Average Expenditures by Location				
		Local Maine	Maine	Local New Brunswick	New Brunswick	Else-where
CANADIAN CURRENCY						
Transportation	$388	$146	$0	$0	$243	$0
Accommodation	0	0	0	0	0	0
Food and Beverage in Restaurants	242	0	0	244	0	0
Food and Beverage in Stores	2,015	73	0	972	971	0
Outdoor Recreation Expenditures	631	0	0	534	97	0
Outfitter/Guide Services	0	0	0	0	0	0
Recreational Equipment	0	0	0	0	0	0
Rental Equipment	0	0	0	0	0	0
Miscellaneous Merchandise	97	0	0	0	97	0
Total Expenditures	$3,373	$215	$0	$1,750	$1,408	$0
AMERICAN CURRENCY						
Transportation	$1,743	$468	$1,275	$0	$0	$0
Accommodation	8,500	6,378	0	2,135	0	0
Food and Beverage in Restaurants	5,950	4,250	850	850	0	0
Food and Beverage in Stores	13,387	10,813	2,128	425	0	0
Outdoor Recreation Expenditures	14,280	10,455	2,128	1,700	0	0
Outfitter/Guide Services	5,525	4,254	0	1,275	0	0
Recreational Equipment	956	532	425	0	0	0
Rental Equipment	918	493	0	425	0	0
Miscellaneous Merchandise	3,952	2,253	1,275	425	0	0
Total Expenditures	$55,211	$39,895	$8,018	$7,235	$0	$0

4.6.3 Type and Location of Expenditures

Table 4.20 summarizes average expenditures per party by type of expenditure.

Table 4.21 summarizes distribution of expenditures by location of expenditure.

4.7 WATERWAY RESIDENT SATISFACTION AND SUPPORT FOR MANAGEMENT AND DEVELOPMENT ALTERNATIVES

4.7.1 Waterway Resident Satisfaction with Various Aspects of their Visit

Resident respondents were asked to indicate their satisfaction/dissatisfaction with various aspects of their visit to the St. Croix Waterway. Their responses are summarized in Table 4.22. Responses were analysed by location of residence and by type of residence. Surprisingly, many Waterway resident respondents frequently did not respond to a number of aspects of their visit presumably because they did not participate in the relevent activities during the study period (e.g., camping) or because that factor did not affect their visit (e.g., availability of firewood).

In general, most residents registered satisfaction with most aspects of their visit and with their overall visit. Dissatisfaction was greatest with overall angling experience, angling catch and, particularly, with waterlevel.

4.7.2 Conflicts Experienced by Waterway Residents

Very few residents of the Waterway experienced conflicts with motorboats, commercial harvesting or cottage

TABLE 4.20: Percent of average expenditures by expenditure category by resident party type.

Expenditure Category	Percent of Average Expenditure/Resident Party			
	Parties Spending Canadian Currency		Parties Spending American Currency	
	Permanent Residents	Seasonal Residents	Permanent Residents	Seasonal Residents
Transportation	11.5	16.9	3.2	14.4
Accommodation	0.0	0.3	15.4	1.6
Food and Beverages in Restaurants	7.1	5.3	10.7	4.8
Food and Beverages in Stores	59.7	37.7	24.3	24.5
Outdoor Recreation Equipment Expenditures	18.7	4.2	25.9	7.0
Outfitter/Guide Services	0.0	0.0	10.0	0.5
Recreational Equipment	0.0	3.6	1.7	4.2
Rental Equipment	0.0	0.0	1.7	0.1
Miscellaneous Merchandise	2.9	3.0	7.2	2.8
Improvements/Maintenance	N/A**	29.0	N/A	40.1
	100.0*	100.0	100.0	100.0

* may not total 100.0% due to rounding.
** not applicable

TABLE 4.21: Distribution of resident expenditures by location.

	Percent of Average Expenditure/Resident Party			
	Parties Spending Canadian Currency		Parties Spending American Currency	
Expenditure Location	Permanent Residents	Seasonal Residents	Permanent Residents	Seasonal Residents
Local Maine	6.5	4.4	72.2	42.6
Maine	0.0	0.9	14.6	23.4
Local New Brunswick	51.8	40.5	13.1	9.8
New Brunswick	41.6	42.3	0.0	4.6
Elsewhere	0.0	12.0	0.0	19.7
	100.0*	100.0	100.0	100.0

* may not total 100.0% due to rounding

TABLE 4.22: Resident satisfaction with various aspects of their visit to the St. Croix Waterway.

	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Number of designated campsites						
Did not state	73.9	72.1	75.0	75.0	76.6	42.9
Very dissatisfied	3.3	4.4	2.7	-	2.6	14.3
Dissatisfied	4.4	3.6	3.9	-	3.2	14.3
Satisfied	13.2	13.4	13.3	16.7	12.3	21.4
Very satisfied	5.6	5.9	5.4	8.3	5.2	7.1
Setting of campsites						
Did not state	77.2	73.5	79.5	75.0	79.2	57.1
Very dissatisfied	1.1	1.5	0.9	-	0.6	7.1
Dissatisfied	1.7	1.5	1.8	-	1.3	7.1
Satisfied	15.0	19.1	12.5	16.7	14.3	21.4
Very satisfied	5.0	4.4	5.4	8.3	4.5	7.1
Maintenance of campsites						
Did not state	73.3	70.6	75.0	66.7	76.0	50.0
Very dissatisfied	2.8	1.5	3.6	-	2.6	7.1
Dissatisfied	4.4	4.4	4.5	8.3	3.2	14.3
Satisfied	16.1	20.6	13.4	25.0	14.3	28.6
Very satisfied	3.3	2.9	3.6	-	3.9	-
Overall angling experience						
Did not state	37.2	41.2	34.8	41.7	37.0	35.7
Very dissatisfied	13.9	14.7	13.4	16.7	11.7	35.7
Dissatisfied	16.1	11.8	18.8	16.7	16.9	7.1
Satisfied	25.6	26.5	25.0	16.7	27.3	14.3
Very satisfied	7.2	5.9	8.0	8.3	7.1	7.1
Angling catch						
Did not state	38.9	39.7	38.4	33.3	39.6	35.7
Very dissatisfied	15.0	13.2	16.1	16.7	13.0	35.7
Dissatisfied	16.7	16.2	17.0	25.0	16.9	7.1
Satisfied	23.3	26.5	21.4	8.3	24.7	21.4
Very satisfied	6.1	4.4	7.1	16.7	5.8	-
Availability of public services						
Did not state	57.8	58.8	57.1	50.0	59.7	42.9
Very dissatisfied	6.7	7.4	6.3	16.7	5.2	14.3
Dissatisfied	8.3	10.3	7.1	-	7.8	21.4
Satisfied	20.6	17.6	22.3	33.3	20.1	14.3
Very satisfied	6.7	5.9	7.1	-	7.1	7.1
Availability of commercial services						
Did not state	50.0	58.8	44.6	50.0	50.0	50.0
Very dissatisfied	3.3	7.4	0.9	8.3	1.3	21.4
Dissatisfied	9.4	10.3	8.9	-	10.4	7.1
Satisfied	27.8	17.6	33.9	33.3	27.9	21.4
Very satisfied	9.4	5.9	11.6	8.3	10.4	-
Availability of firewood						
Did not state	76.1	75.0	76.8	66.7	78.6	57.1
Very dissatisfied	2.8	1.5	3.6	-	2.6	7.1
Dissatisfied	1.7	1.5	1.8	-	1.9	-
Satisfied	15.6	20.6	12.5	25.0	13.0	35.7
Very satisfied	3.9	1.5	5.4	8.3	3.9	-
Satisfaction with water level						
Did not state	27.2	26.5	27.7	41.7	27.9	7.1
Very dissatisfied	34.4	35.3	33.9	41.7	33.1	42.9
Dissatisfied	18.3	16.2	19.6	-	19.5	21.4
Satisfied	16.1	20.6	13.4	16.7	14.9	28.6
Very satisfied	3.9	1.5	5.4	-	4.5	-
Overall visit						
Did not state	42.8	50.0	38.4	41.7	42.2	50.0
Very dissatisfied	2.2	2.9	1.8	8.3	1.3	7.1
Dissatisfied	11.1	8.8	12.5	25.0	9.7	14.3
Satisfied	31.7	26.5	34.8	16.7	33.8	21.4
Very satisfied	12.2	11.8	7.8	8.3	13.0	7.1

development (Table 4.23). Commercial forest harvesting was the conflict most noted, particularly by residents owning both permanent and seasonal residences.

4.7.3 Support for Recreational Management Alternatives

It may be necessary to introduce a variety of alternative management techniques to control the amount and distribution of recreational use and, hence, protect the natural, historical, aesthetic and semi-wilderness recreational values of the Waterway. A number of recreational management alternatives were tested for support by residents owning property along the Waterway since these management techniques might very well directly or indirectly affect the residents enjoyment of the Waterway.

Table 4.24 summarizes Waterway resident support for the various recreational management alternatives.

In general, Waterway residents registered the greatest support for a mandatory carry in/carry out litter policy (76.1%), stocking the Waterway (76.1%), regulations/zoning for shoreline development (66.7%), increased patrols for safety and security (62.8%) and increased restrictions on fires. Less than half of all respondents supported each of the other management alternatives and support was least for mandatory pre-registration to camp throughout the Waterway (32.8%).

4.7.4 Support for St. Croix Waterway Development Alternatives

A number of development alternatives have already been proposed for the St. Croix Waterway and for the St. Croix

TABLE4.23: Conflicts experienced by Waterway residents during the period September 1, 1985 and August 31, 1986 (in percent of respondents).

Conflicts with	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Motorboats	6.1	4.4	7.1	8.3	5.8	6.7
Commercial forest harvesting	13.9	14.7	13.4	8.3	11.1	46.7
Cottage development	4.4	4.4	4.4	-	4.6	6.7
Other	8.3	11.8	6.3	25.0	7.8	-

TABLE 4.24: Support for recreational management alternatives for the St. Croix Waterway by resident of the Waterway (in percent of respondents).

	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasonal
Mandatory pre-registration to camp						
Did not state	28.9	27.9	29.5	8.3	29.9	35.7
Totally opposed	10.0	8.8	10.7	25.0	9.1	7.1
Opposed	12.2	11.8	12.5	8.3	11.7	21.4
Indifferent	16.1	25.0	10.7	41.7	13.0	28.6
Supportive	15.0	11.8	17.0	16.7	15.6	7.1
Very supportive	17.8	14.7	19.6	-	20.8	-
Mandatory recreational permit to camp						
Did not state	26.1	27.9	25.0	8.3	26.6	35.7
Totally opposed	9.9	7.4	10.7	16.7	9.1	7.1
Opposed	10.0	11.8	8.9	8.3	9.1	21.4
Indifferent	12.2	19.1	8.0	33.3	9.7	21.4
Supportive	21.7	16.2	25.0	25.0	22.1	14.3
Very supportive	20.6	17.6	22.3	8.3	23.4	-
Limiting party size						
Did not state	26.7	27.9	25.9	16.7	26.6	35.7
Totally opposed	5.0	4.4	5.4	16.7	4.5	-
Opposed	8.3	8.8	8.0	-	9.1	7.1
Indifferent	16.1	25.0	10.7	16.7	16.2	14.3
Supportive	24.4	20.6	26.8	41.7	22.1	35.7
Very supportive	19.4	13.2	23.2	8.3	21.4	7.1
Limiting length of stay of overnight visitors						
Did not state	26.7	27.9	25.9	16.7	27.3	28.6
Totally opposed	4.4	7.4	2.7	25.0	3.2	-
Opposed	8.3	4.4	10.7	-	9.1	7.1
Indifferent	22.2	30.9	17.0	25.0	22.7	14.3
Supportive	21.7	17.6	24.1	25.0	20.1	35.7
Very supportive	16.7	11.8	19.6	8.3	17.5	14.3
Increased restrictions on fires						
Did not state	20.6	22.1	19.6	-	21.4	28.6
Totally opposed	2.8	2.9	2.7	16.7	1.3	7.1
Opposed	8.3	7.4	8.9	-	7.8	21.4
Indifferent	10.6	13.2	8.9	25.0	9.7	7.1
Supportive	26.1	25.0	26.8	41.7	27.3	-
Very supportive	31.7	29.4	33.0	16.7	32.5	35.7
Mandatory requirements for portable cooking equipment						
Did not state	25.6	26.5	25.0	8.3	26.0	35.7
Totally opposed	4.4	5.9	3.6	16.7	3.2	7.1
Opposed	11.1	7.4	13.4	-	11.7	14.3
Indifferent	22.2	30.9	17.0	33.3	21.4	21.4
Supportive	15.0	11.8	17.0	33.3	14.9	-
Very supportive	21.7	17.6	24.1	8.3	22.7	21.4
Stocking the Waterway						
Did not state	17.2	20.6	15.2	-	17.5	28.6
Totally opposed	1.1	-	1.8	8.3	0.6	-
Opposed	1.1	2.9	-	-	0.6	7.1
Indifferent	4.4	7.4	2.7	16.7	3.2	7.1
Supportive	14.4	17.6	12.5	8.3	15.6	7.1
Very supportive	61.7	51.5	67.9	66.7	62.3	50.0
Mandatory carryin/carryout litter policy						
Did not state	18.3	20.6	17.0	-	19.5	21.4
Totally opposed	0.6	-	0.9	-	0.6	-
Opposed	1.7	1.5	1.8	-	1.9	-
Indifferent	3.3	5.9	1.8	16.7	2.6	-
Supportive	12.2	17.6	8.9	16.7	12.3	7.1
Very supportive	63.9	54.4	69.6	66.7	63.0	71.4
Increased patrols for safety and security						
Did not state	23.3	23.5	23.2	-	24.0	35.7
Totally opposed	1.7	1.5	1.8	8.3	1.3	-
Opposed	2.8	1.5	3.6	-	2.6	7.1
Indifferent	9.4	10.3	8.9	16.7	7.8	21.4
Supportive	20.6	23.5	18.8	8.3	21.4	21.4
Very supportive	42.2	39.7	43.8	66.7	42.9	14.3
Regulations/zoning for shoreline development						
Did not state	20.6	25.0	17.9	-	21.4	28.6
Totally opposed	2.2	1.5	2.7	8.3	1.9	-
Opposed	2.2	1.5	2.7	-	1.9	7.1
Indifferent	8.3	13.2	5.4	25.0	7.1	7.1
Supportive	25.0	23.5	25.9	33.3	26.0	7.1

Waterway Recreational Area on the New Brunswick side of the study area (Anonymous, 1983). Support for several of these development alternatives was tested on the Waterway resident target population. Residents were not asked to indicate degree of support but rather to indicate only those developments they felt were desireable for the study area and the immediately adjacent local region.

Table 4.25 summarizes support for the various alternative developments by Waterway residents by location and type of residence. More Waterway residents indicated that no developments were desireable (22.8%) than did they support any single development alternative. Family vacation camps (21.7%) campsites accessible by water only (20.0%) environmental/naturalist centres (17.8%) and commercial service supply centres (17.8%) received the greatest support by Waterway residents. Surprisingly support was least for interpretive naturalist tours (7.2%), campsites accessible by vehicle (8.3%); commercial outfitters/lodges (8.3%) and outdoor recreational training centres (9.4%).

LE 4.25: Support for alternative developments along the St. Croix Waterway o within the immediate vicinity by resident respondents (in percent).

Alternative Developments	All Respondents	Location of Residence		Residence Type		
		New Brunswick	Maine	Permanent	Seasonal	Permanent & Seasona
door recreational ning centres	9.4	8.8	9.8	-	9.8	13.3
ironmental/ ralist centres	17.8	16.2	18.8	-	18.9	20.0
erpretive/ ralist tours	7.2	10.3	5.4	8.3	6.5	13.3
psites accessible vehicle only	8.3	8.8	8.0	16.7	8.5	-
psites accessible water only	20.0	19.1	20.5	16.7	17.6	46.7
psites accessible trail only	10.6	8.8	11.6	16.7	9.2	20.0
ipurpose campsites essible by vehicle, er and/or trail	16.7	16.2	17.0	16.7	17.0	13.3
ly vacation camps	21.7	25.0	19.6	41.7	19.6	26.7
ercial outfitters/ es	8.3	10.3	7.1	25.0	7.2	6.7
ercial service ly centres	17.8	22.1	15.2	33.3	16.3	20.0
tle service and ing for canoeists	11.7	14.7	9.8	16.7	9.8	26.7
er	2.2	5.9	-	-	2.0	6.7
evelopment	22.8	16.2	26.8	16.7	24.8	6.7

CHAPTER 5: RECREATIONAL USE OF THE ST. CROIX WATERWAY BY COMMERCIAL OUTFITTERS AND LODGES

5.0 RECREATIONAL USE OF THE ST. CROIX WATERWAY BY GUESTS OF COMMERCIAL OUTFITTERS AND LODGES

5.1 STUDY METHODS

Commercial outfitters and lodges cater to paying guests whose primary purpose is generally to participate in specific outdoor recreational activities such as fishing or hunting. Commercial outfitters and lodge operators/owners were surveyed in September via a mailback questionnaire (APPENDIX II) which was based on total recreational use by guests during the period September 1, 1985 to August 31, 1986. Data was not collected by specific season but the itemized outdoor recreational activities were generally distinctively seasonal in nature (e.g., snowshoeing, ice fishing, canoeing, hunting, etc.).

Thirteen commercial outfitters or lodges were identified as being primary users of the St. Croix Waterway. Of the seven located in New Brunswick and the six in Maine, eleven had private access to the Waterway while others were in close proximinity.

Since there were so few, the mailback questionnaire was mailed to all commercial outfitters/lodges. Prior to the mailout in September, the Atlantic Centre for the Environment (ACE) (see Chapter 6) Field Project Leader visited each commercial outfitter/lodge to explain the recreational use study and the value of their input. A draft of the questionnaire specifically designed for this survey population was given to the commercial/outfitters lodge operators/owners at this time so that they could collect appropriate information. In every case, the response by businesses approached was very good.

A second copy of the questionnaire was mailed out in September for completion and mailback. Only five businesses responded to the questionnaire: three of which were located in York County, New Brunswick and two in Washington County, Maine. One of the respondents located in New Brunswick indicated that their business normally operates during the spring and summer but did not operate at all during 1986 and, hence, their questionnaire was incomplete except for responses to the question on support for development alternatives for the Waterway and general comments.

Despite the few number of responses, the data collected from this questionnaire is presented in the following sections of this report. Data is reported in terms of both frequency and percent of respondents. In addition, comments made by respondents on the returned questionnaires are included.

Since there were so few respondents and, because the questionnaires were not all accurately completed and hence, required some interpretation on the part of the author, no attempt was made to estimate total recreational use of the Waterway by all commercial outfitters/lodges.

5.2 RECREATIONAL USE OF THE WATERWAY BY COMMERCIAL OUTFITTERS AND LODGES.

5.2.1 Operational Seasons

Table 5.1 presents the operational seasons of respondents. Only one business located in New Brunswick, operated all year during the study period. The remaining respondents operated primarily in the spring and summer.

5.2.2 Recreational Business

Table 5.2 summarizes the respondents recreational business and use of the Waterway during the study period by recreational activity.

TABLE 5.1: Percent of outfitter/guide businesses and commercial lodges operating by season.

Season of Use	% of Outfitters/Guide Business/Commercial Lodges					
	Total		York Co., NB		Washington Co., Maine	
	#	%		%	#	%
Spring	4	80	2	66.7	2	100.0
Summer	4	80	2	66.7	2	100.0
Fall	2	40	1	33.3	1	50.0
Winter	0	0	0	0	0	0
All Year	1	20	1	33.3	0	0

TABLE 5.2: A summary of recreational business and use of the Waterway by commercial outfitter/lodge respondents.

Recreational Activity	Businesses Offering Activity		Average Number of Guests	Average Length of Stay per Guest	Average Daily Guest Expenditure	Average Business Expenditure for Major Recreational Purchases	% of Guests From				Businesses Operating Throughout					
											Chiputneticook Lakes		St. Croix River		Elsewhere	
	#	%					Maine	Other U.S.	New Brunswick	Other Canada	# of Respondents	%	# of Respondents	%	# of Respondents	%
Angling	4	80.0	268	4.9	$90.00	$3333.00	9.3	85.0	5.0	0.7	4	80.0	2	40.0	2	40.0
Hunting	3	60.0	117	6.0	90.00	1433.00	4.0	94.6	0.7	0.7	2	40.0	1	20.0	1	20.0
Canoeing	2	40.0	40	3.5	72.00	1250.00	2.5	95.0	2.5	0.0	2	40.0	1	20.0	0	0.0
Camping	1	20.0	14	4.0	70.00	100.00	0.0	100.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Hiking	1	20.0	4	3.0	100.00	150.00	0.0	100.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Nature Study/ Birdwatching	1	20.0	2	3.0	100.00	50.00	0.0	100.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Snowmobiling	1	20.0	75	5.0	150.00	4000.00	4.0	96.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Snowshoeing	1	20.0	4	3.0	150.00	50.00	0.0	100.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Cross Country Skiing	1	20.0	2	3.0	150.00	150.00	0.0	100.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Ice Fishing	1	20.0	60	5.0	150.00	1000.00	20.0	80.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Winter Camping	1	20.0	2	3.0	70.00	50.00	0.0	100.0	0.0	0.0	1	20.0	0	0.0	0	0.0
Other	0	0.0	0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0	0.0

Angling was very clearly the mainstay recreational activity/ business of commercial outfitters/lodges on the Waterway, followed by hunting and canoeing. Only one business offered any of the other recreational activities and snowmobiling and ice fishing were clearly the most important in terms of numbers of guests and greatest revenue.

A total of 588 guests visited the businesses operated by the respondents: 45.6% of these guests were anglers, 19.9% were hunters, 13.4% were snowmobilers and 10.2% were ice fishermen. All other activities accounted for only 10.9% of all guests.

A total of 2934 recreation days were consumed by guests during the study period: 44.8% of these days were consumed by anglers, 23.9% by hunters, 12.8% by snowmobilers and 10.2% by ice fishermen.

Guests to respondents' businesses spent an estimated $300,938 during the study period: 39.3% of these expenditures were made by anglers, 21.0% by hunters, 18.7% by snowmobilers and 15.0% by ice fishermen. All other activities accounted for only an estimated $18,320 or 6.1% of all guest expenditures.

Respondent outfitters/lodge operators spent an estimated $25,680 during the study period on major recreational purchases. Purchases for angling accounted for slightly more than half (51.9%) of these expenditures. Hunting (16.7%), snowmobiling (15.5%) and canoeing (9.7%) accounted for a considerably lesser proportion of these expenditures. Expenditures on all other activities were negligible.

Guests to the respondents' businesses were overwhelmingly from the United States, with the exception of the State of Maine. Very few guests were Canadian.

Respondents operated predominantly throughout the Chiputneticook Lakes with some use of the St. Croix River.

5.2.3 Vehicle and Boat Usage

Table 5.3 summarizes vehicle and boat usage by commercial business respondents.

5.2.4 Support for Waterway Development Alternatives

Table 5.4 summarizes respondent support for alternative developments along the St. Croix Waterway or within the

TABLE 5.3: Percent of outfitter/guide businesses and commercial lodges using various types of vehicles and boats.

	% of Outfitter/Guide Business/Commercial Lodges					
	Total Respondents		York Co., NB Respondents		Washington Co. Respondents	
	#	%	#	%	#	%
All-terrain Cycle	2	40.0	2	66.7	0	0.0
Dune Buggy	0	0.0	0	0.0	0	0.0
Jeep	1	20.0	1	33.3	0	0.0
Canoes	5	100.0	3	100.0	2	100.0
Motorboats with 9.9 hp or less	5	100.0	3	100.0	2	100.0
Motorboats with 10 hp or more	4	80.0	2	66.7	2	100.0
Boat with no motor	1	20.0	1	33.3	0	0.0
Sailboards	0	0.0	0	0.0	0	0.0
Sailboards	0	0.0	0	0.0	0	0.0
Other	0	0.0	0	0.0	0	0.0

TABLE 5.4: Support for alternative developments along the St. Croix Waterway or within the immediate vicinity by outfitter/guide businesses and commercial lodges.

Alternative Developments	% Outfitters/Guide Businesses/Commerical Lodge					
	Total Respondents		York Co., NB Respondents		Washington Co., ME Respondents	
	#	%	#	%	#	%
Outdoor recreational training centres	1	20.0	1	33.3	0	0.0
Envrionmental/ naturalist centres	1	20.0	1	33.3	0	0.0
Interpretive/ naturalist tours	0	0.0	0	0.0	0	0.0
Campsites accessible by vehicle only	1	20.0	1	33.3	0	0.0
Campsites accessible by water only	1	20.0	1	33.3	0	0.0
Campsites accessible by trail only	2	40.0	2	66.7	0	0.0
Multipurpose campsites accessible by vehicle, water and/or trail	2	20.0	2	66.7	0	0.0
Family vacation camps	0	0.0	0	0.0	0	0.0
Road commercial outfitters/ lodges	1	20.0	1	33.3	0	0.0
Commercial service supply centres	1	20.0	1	33.3	0	0.0
Shuttle service and parking for canoeists	0	0.0	0	0.0	0	0.0
Other	0	0.0	0	0.0	0	0.0

immediate vicinity. It should be noted that three of the five respondents did not support any development at all.

5.2.5 Respondents' Comments

Four of the five respondents included general comments on their questionnaire which are noted here verbatim because of their value in best explaining the commercial recreational businesses' concerns.

"Our type of business depends heavily on low density use of the wilderness and waters. Our clientele comes from all over the East to get away from people and to catch a few fish.

Every access road and every new landing and each new cottage is another nail in the coffin of the fishing lodge industry. Why, just why, cannot the State of ME and Province of N.B. protect such an area from increased use and development? Can't we as humans recognize that there have become fewer places to get off by oneself for a private experience with nature?

If I can make one request, please do not encourage any higher level of recreational use of the St. Croix area than present.

(Note: We presently employ some 15 persons)"

"Any campsites or access areas should be maintained, garbage, etc."

" 1. Marine facilities on the two larger lakes. East Grand and Spednic.

2. An immediate and in depth study of the fishery resource. It is in serious trouble.

3. Public launch sites be built on the two larger lakes.

4. An agreement be reached with owners of land in the area be used to allow for trails to be cut and marked througout the forest from Fosterville to St. Croix. Trails would be restricted in summer for use by backpackers with campsites along the route. These trails could interlock with the lakes. Some lakes are open to winter ice fishing and the same trails could be used for snowmobiles in the winter. If snowmobiles are not used the trails could be used for cross country skiing.

Or a mixture of both."

"More camping sights on Spednic Lake as there are not enough to hold the boat and canoe traffic.

Clean up the garbage on existing sites as it was not hauled once by the government in 1986 season.

I had over thirty people who will not come back to New Brunswick next year due to the filthy sight of the camping grounds. I put my own crew (to), cleaning up two (to) three different times."

CHAPTER 6: USE OF THE ST. CROIX WATERWAY BY OTHER RECREATIONAL VISITORS

6.0 USE OF THE ST. CROIX WATERWAY BY OTHER RECREATIONAL VISITORS

6.1 STUDY METHODS

An exit survey of a sample of all recreational visitors to the study area other than Waterway residents was developed to obtain information about amount, distribution and type of recreational use, user satisfaction with existing opportunities and user support for possible future management alternatives for the Waterway (APPENDIX III). Personal interviews were conducted in the field by the ACE Field Project Leader and crew members.

Since there were no historical recreational use data, it was impossible to approximate the number of recreational visitors who would be contacted during the survey period.

6.1.1 Study Limitations

There were a number of factors which, to varying degrees, affected both the survey design for this target population and field implementation as well as the results of the survey.

1. Field work was to be undertaken by five staff from the Atlantic Centre for the Environment (ACE). This staff

complement included the Project Leader. Unfortunately, the loss of one field team member early in the survey period reduced the staff complement to four and necessitated increased active participation by the Project Leader in the field.

2. Field staff were not familiar with the St. Croix Waterway and field time had to be assigned to staff orientation to the study area.

3. Field staff were also assigned other responsibilities which necessitated their being absent from the field: conducting telephone interviews with a sample of travel agents, developing the list of Waterway resident households from provincial and state tax assessment records, etc.

4. The study area stretches approximately 125 km from its northern-most point at Monument Brook to the southern-most point at St. Stephen/Calais. The highway/forest road network servicing the St. Croix Waterway is not direct, thereby necessitating lengthy transportation time from one survey site to another.

5. The forest fire situation in New Brunswick was particularly serious during the latter half of May. Forests in the Province were closed to all recreational travel including the ACE field crew from May 16 - 19, a long weekend generally considered by New Brunswick residents as the first opportunity to participate in outdoor recreational activities, particularly canoeing and fishing.

6.1.2 Sample Frame

The sample frame for this target population was all days between May 17 and September 1, 1986 and weekends (Saturday and Sunday) from September 6 to September 28 inclusive. In fact, however, days were eliminated for staff orientation to the study area, staff days off, other staff responsibilities including visits to commerical outfitters/ lodges, conducting telephone interviews with a sample of travel agents (see Sec. 9.3), developing a list of Waterway residents from tax assessment records and only the first two weekends in September were monitored when only one interview resulted. Over the complete 105-day survey period, 68 days were monitored.

6.1.3 Survey Sites

Recreational visitors were questioned on exiting the Waterway. Twenty-one exit points were initially identified as accounting for the greatest proportion of exit use by recreational visitors (MAP I). Exits to be surveyed were identified by persons knowledgeable of the study area. One exit, Sunset Park, was eliminated early in the sample frame because it was a private marina, not a public landing. Five other survey sites, Red Bank, Palfrey Lake Lodge, Spednic Lake Provincial Park, Gleason's Point and Grand Falls Flowage Road, were eliminated throughout the survey period as survey efforts proved fruitless. Five exit points were added throughout the survey period as the ACE field crew learned of their use by local residents. These survey sites included Greenland Cove Campground, Greenland Cove Camps, Rideouts, Princeton Bridge and Squirrel Point.

At the beginning of the survey period, it was assumed that Forest City, St. Croix/Vanceboro, Loon Bay and Grand Falls accounted for a greater proportion of exit use by recreational visitors. All survey points except these four were to be surveyed equally in terms of number of weekdays and weekend days, time periods etc. A disproportionate arrangement of survey days was used to account for the four exits that presumably were used more heavily.

Due to the large number of exit points, the lack of historical traffic exit data and the field crews nescience of the study area, it was necessary to develop a schedule of survey days for the first 35 days (May 17 - June 20) of the survey period. Frequent changes were necessary, however, to allow for field crew orientation to the study area, closure of the woods due to forest fires in New Brunswick, washed out access roads to survey sites, etc. The ACE Project Leader modified the initial schedule and then developed field schedules on a spasmodic basis to accommodate for survey sites that were heavily used or rarely used by recreationists, weekday vs. weekend use, staff time-off, long weekends, etc. APPENDIX IV provides the survey schedule followed monthly by the ACE field crew and APPENDIX V illustrates, in table format, individual survey site coverage by month and by day.

6.1.4 Interview Procedures

All recreational trip/travel parties exiting at the survey site were interviewed. The head of each trip/travel party was asked to respond to the questionnaire on behalf of his/her party. For the purposes of this study, the trip/travel party was the collection of individuals who jointly planned and made the trip to the study area. The head of the recreational party was the person appointed by the group to speak on their behalf. In many cases, however, the party as a whole responded to the questionnaire.

One field crew member was located at each survey site and was responsible for conducting the personal interviews with departing recreational parties. In this way it was possible to cover up to four survey sites in one day depending upon the number of staff on duty and the proximity of survey sites.

6.1.5 Response Burden

The questionnaire was designed to be administered in no more than ten (10) minutes. Interviews frequently took longer due to the respondent's interest in the study and their questions.

It was not possible to determine how many times a visitor could be interviewed during the survey period. There was a distinct possibility that the same person could be interviewed on subsequent visits to the study area. Eliminating Waterway residents from exit interviews reduced this likelihood, however. Since the purpose of the study was to measure amount, distribution and type of recreational use, visit characteristics, user satisfaction and user support for potential management alternatives and since no two visits are identical, interviews were repeated if respondents were willing.

6.1.6 Confidentiality

No personal information was retained which could identify any individual or party. Survey results are reported as aggregated responses only. All respondents were advised that they were under no obligation to answer the questionnaire and that all answers would be kept strictly confidential.

6.1.7 Traffic Counts

In addition to the personal interviews conducted at designated campsites, staff at Spednic Lake and North Lake Provincial Park and at the Milltown dam were asked to complete daily traffic counts of recreational visitors exiting/accessing the Waterway at their respective sites (APPENDIX VI). While North Lake Provincial Park did, in fact, complete these daily forms, no traffic was noted throughout the entire study period. Forms were not completed for either Spednic Lake Provincial Park or the Milltown dam sites.

6.2 RECREATIONAL USE BY VISITORS TO THE ST. CROIX WATERWAY

One of the principal objectives of this study was to estimate the total amount of recreational use on the St. Croix Waterway. While the study methods were in accordance with standard practice, there were many factors limiting, to varying degrees the study design and the field implementation (see Sec. 3.2 and Sec. 6.1.1).

While a total of 140 survey site visits were made during the survey period and 275 personal interview questionnaire were successfully completed (Table 6.1), sampling, although random, did not allow for sufficient individual site monitoring. Four sites, St. Croix/Vanceboro, Little Falls, Loon Bay and Grand Falls accounted for 38.7% of all site visits and 48.4% of all personal interviews successfully completed. Even these sites, however, did not have sufficient coverage throughout the entire survey period or during one specific month to allow for reliable use estimates. For example, some sites were monitored only one

TABLE 6.1: Site visits and questionnaires successfully completed by survey site

Survey Site	Number of Visits			Percent of Total Visits	Number of Questionnaires Successfully Completed	Percent of Total Number of Questionnaires Succesfully Completed
	Weekday	Weekend	Total			
North Lake Provincial Park	2	3	5	3.6	18	6.5
Fosterville	1	3	4	2.9	5	1.8
Redbank	1	1	2	1.4	0	0.0
Butterfield Landing	3	3	6	4.3	6	2.2
Greenland Point	3	4	7	5.0	13	4.7
Forest City	3	3	6	4.3	13	4.7
Forest City Landing	3	3	6	4.3	9	3.3
Spruce Mountain Landing	2	1	3	2.1	1	0.4
Spednic Lake Road	3	1	4	2.9	2	0.7
Palfrey Lake Lodge	1	0	1	0.7	0	0.0
Spednic Lake Provincial Park	2	0	2	1.4	0	0.0
St. Croix/Vanceboro	8	4	12	8.8	37	13.5
Little Falls	4	6	10	7.1	13	4.7
Beaconsfield Road	1	4	5	3.6	8	2.9
Loon Bay	4	11	15	10.7	31	11.3
Gleason's Point	2	0	2	1.4	0	0.0
Grand Falls Dam	9	8	17	12.1	52	18.9
Woodland	6	2	8	5.7	18	6.5
Milltown	5	1	6	4.3	16	5.8
*Greenland Cove Campground	1	1	2	1.4	2	0.7
*Greenland Cove Camps	2	0	2	1.4	3	1.1
*Rideouts	2	1	3	2.1	7	2.6
*Princeton Bridge	6	2	8	5.7	14	5.1
*Squirrel Point	3	1	4	2.9	7	2.6
TOTAL	77	63	140	100.0	275	100.0

*Survey sites added throughout survey period.

**Sunset Point and Grand Falls Flowage Road were eliminated as survey sites at the beginning of the survey period due to rare use and road washout, respectively.

or two weekdays over the entire survey period (e.g., Beaconsfield Road, Fosterville) or in a specific month (e.g., Loon Bay in both June and July, Grand Falls in August) (see APPENDIX V).

Unfortunately, the few number of field staff, the number of survey sites and the logistics of travelling throughout the study area, all contributed to sparse site coverage. A review of possible estimating methods has clearly demonstrated that, applied to this study, none would produce estimates sufficiently reliable. Even field staff could not accurately estimate the numbers of non-resident recreational visitors to the Waterway throughout the survey period.

Based on comments by local residents, however, it would appear that the numbers of visitors to the Waterway were down considerably from previous years, possibly due, in part, to abnormally poor weather. Weather during the study period was several degrees cooler than normal throughout all five months (Table 6.2). August was particularly poor with much greater rainfall than normal and fewer hours of bright sunshine. The weather is clearly suspect in reducing the number of recreational visitors to the study area below

TABLE 6.2: A comparison of weather during the study period (May to September, 1986) with normal weather patterns

	May	June	July	August	September
Temperature (^{o}C)					
1986 Mean	10.7	14.4	17.5	16.8	11.0
Normal	10.8	16.2	19.3	18.2	13.2
Rainfall (mm)					
1986 Mean	71.5	50.8	83.3	143.9	83.3
Normal	82.1	85.0	88.8	87.0	86.8
Hours of Bright Sunshine					
1986 Mean	209.4	260.4	207.2	186.0	187.6
Normal	200.3	205.9	232.9	221.2	169.3

what local residents claimed was normal. Numbers of visitors appeared to be down considerably on weekends which seemed to be rainier than usual. Certainly the very poor weather in August contributed to reduced recreational use and probably, somewhat, to the recreationists' propensity to participate in outdoor activities in September after a month's leave.

The ACE field crew found that recreational use by local residents is very weather related. In good weather, a high percentage of daily use at St. Croix/Vanceboro, Princeton Bridge and North Lake Provincial Park, for example, is swimming by local residents. Consequently, the number of interviews conducted at these survey sites depended almost entirely on the weather of the day. At other survey sites, which were less readily accessible and where use was primarily angling or canoeing, weather had a reduced effect on the number of interviews conducted.

Despite the impossibility of estimating the total amount of use by this survey population, it is suggested that data gathered from the personal interviews conducted with recreational visitors is sufficiently indicative of visitor travel patterns, characteristics, satisfaction with existing opportunities and support for alternative management options to allow for relatively reliable conclusions. Results, therefore, are estimates from the survey responses of the sample of recreational visitors only, not estimates of the true values for the entire target population. Tables throughout this chapter are based on percent of respondents but the number of respondents are noted where relevant.

It is also suggested that, based on this study, no accurate means of estimating total recreational use throughout the entire study area can be expected to yield satisfactory use estimates without supplementing field staff and/or using alternative complementary techniques such as photographic equipment and traffic counters. Alternatively, reducing the size of the study area would similarly allow for increased individual site monitoring.

6.2.1 Recreational Use by Month and by Day

Assuming the number of interviews conducted by month and by day are generally indicative of recreational use patterns which, in the summer, are subject to the sterotypical summer holidays, recreational use of the Waterway is greatest in July and on weekends (Table 6.3). Fewer visitors were interviewed in May and September because of both the reduced number of survey days and the normally fewer number of recreationists at this time of year. The drop in the number of interviews conducted in August, half of those conducted in July, was probably primarily due to the cool, rainy weather experienced throughout the entire month and also because the field crew was reduced to two persons on August 18 and field crew off-site responsibilities increased during this month in terms of conducting the travel agent survey and developing the list of Waterway resident households from state and provincial tax assessment records. It is unlikely that this monthly use pattern is typical for the Waterway.

As expected, more visitors were interviewed on weekends (58.8%) than on weekdays (41.2%)(Table 6.3). July was the only exception to this, when, in keeping with summer holiday patterns, more visitors would be expected to use the Waterway throughout the week as well as on weekends.

TABLE 6.3: Percent of all interviews conducted by month and day.

	Percent of Interviews Conducted		
	Weekday	Weekend	Total
May	1.8	1.1	2.9
June	8.4	19.6	28.0
July	25.5	20.3	45.8
August	5.1	17.4	22.5
September	0.4	0.4	0.8
	41.2*	58.8	100.0
Number of Respondent Parties	113	162	275

* may not total 100.0% due to rounding

6.2.2 Visitor Citizenship and User Type

Of the 275 recreational visitor parties interviewed, 181 were American, 93 were Canadian and one (1) was a German family. Table 6.4 summarizes the percentage of visitor interviews successfully completed throughout the survey period by citizenship and user type by day of week and month of interview. Canadians accounted for 33.8% of all interviews while Americans accounted for almost twice as many interviews (65.8%). Since the number of survey sites was approximately equal on both sides of the international boundary, it would appear that nearly twice as many American parties use the Waterway as do Canadian parties.

Local users were defined as those recreational visitors whose permanent residence was within close proximity of the study area. Map III illustrates the demarcation that was used for determining local users versus non-local users who lived outside the local Waterway boundary. Local users do not include residents whose home or camp/cottage is located directly on the Waterway or within easy walking distance and who were automatically eliminated at the beginning of the interview. The resident population was surveyed separately at season end and the resident demand data is in Chapter 4 of this report.

TABLE 6.4: Percent of total respondents interviewed by day of week and by month.

		Citizenship			User Type	
	Total	Can.*	Amer.*	Other	Local	Non Local
Day of Week						
Weekday	41.1	9.1	31.6	0.4	13.8	27.3
Weekend	58.9	24.7	34.2	-	24.0	34.5
	100.0	33.8	65.8	0.4	37.8	61.8
Month						
May	2.9	-	2.9	-	-	2.9
June	28.0	10.9	17.1	-	10.9	17.1
July	45.8	15.3	30.2	0.4	17.8	28.0
August	22.5	7.3	15.3	-	8.7	13.5
September	0.7	0.4	0.4	-	0.4	0.4
	100.0	33.8	65.8	0.4	37.8	61.8
Number of Respondent Parties		93	181	1	105	170

*Can. - Canadian
Amer.- American

local user parties accounted for 37.8% of all use by this survey population and non-local visitor parties accounted for 61.8% (Table 6.5).

Canadian parties overwhelmingly used the Waterway on weekends (73.1%) (Table 6.5) in comparison with American parties whose usage was equally distributed throughout the entire week. Not surprisingly, local use tended to be on weekends while non-local parties, who travel further, used the Waterway during the week and on the weekends.

Monthly recreational use was generally consistent across citizenship and user type with nearly half of all use occurring in July (Table 6.5).

6.2.3 Repeat Interviews

Only 1.8% of all respondents were interviewed more than once during the survey period (Table 6.6).

6.3 RECREATIONAL VISITOR PARTY PROFILE

Responses to the questionnaire are summarized in the following sections. Data has been analysed on the basis of all respondent parties and by citizenship (Canadian, American and Other) and user type (local and non-local).

TABLE 6.5: Percent of respondents by citizenship and user type by interview day and month.

		Citizenship			User Type	
	Total	Can.	Amer.	Other	Local	Non Local
Day of Week						
Weekday	41.1	26.9	48.1	100.0	36.5	43.9
Weekend	58.9	73.1	51.9	-	63.5	56.1
	100.0	100.0	100.0	100.0	100.0	100.0
Number of Respondent Parties	275	93	181	1	105	1 70
Month						
May	2.9	-	4.4	-	-	4.7
June	28.0	32.3	26.0	-	28.8	27.5
July	45.8	45.2	45.9	100.0	47.1	45.0
August	22.5	21.5	23.2	-	23.1	22.2
September	0.7	1.1	0.6	-	1.0	0.6
	100.0*	100.0	100.0	100.0	100.0	100.0
Number of Respondent Parties	275	93	181	1	105	170

*may not total 100.0% exactly due to rounding

TABLE 6.6: Percent of visitor parties subjected to repeat interviews.

Previously Interviewed This Year	Total	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Yes	1.8	-	2.8	-	2.9	1.2
No	98.2	100.0	97.2	100.0	97.1	98.8
Number of Respondent Parties	275	93	181	1	105	170

While there was only one foreign visitor party, a German family, the data from their interview is included in all tables for interest.

6.3.1 Permanent Residence

Nearly all (92.5%) Canadian visitors to the St. Croix Waterway were from New Brunswick: 34.4% were from Charlotte County, 29.0% from York County, 15.1% from Carleton County, 8.6% from Saint John, 3.2% from Fredericton and 1.1% from both Kings and Victoria Counties. Only 7.5% of all Canadian visitors were from outside New Brunswick: 6.4% from Ontario and 1.1% from Nova Scotia.

While the majority (58.1%) of American visitors were from Maine, 41.9% were from other states: 11.6% from Massachusetts, 5.5% from each of New York and Connecticut, 5.0% from New Jersey, 3.3% from Pennsylvania, 2.2% from New Hampshire, 1.1% from Rhode Island and 5.0% from other states.

Of the American visitors from Maine, not surprisingly, 29.3% were from Washington County while 8.8% were from Penobscot County, 5.5% from Aroostook County, 4.4% from

Hancock County, 3.3% from Cumberland County and the remainder were from other counties in Maine.

Local users accounted for approximately half of all New Brunswick and Maine visitors: 49.1% of Maine residents and 50.9% of New Brunswick residents lived within the defined local area.

6.3.2 Visitor Party Characteristics: Size, Age, Sex & Composition

Approximately one quarter (26.2%) of all visitor parties consisted of two people (Table 6.7). American visitor parties, more so than Canadian parties, tended to consist of two people, while Canadian parties were more frequently single recreationists (16.1% of all Canadian parties) and large groups of eight or more people (22.8%).

Not surprisingly, local user visitor parties tended to be single recreationists (16.3%) as opposed to non-local users (6.5%) while larger groups of eight or more people per party were generally non-local users (18.3%).

The average party size of all visitor parties was 4.8 persons. Canadian and non-local parties were somehwat larger with an average of 5.4 and 5.2 persons per party

TABLE 6.7: Percent of visitor parties by number of people in visitor party and average party size.

Number of People in Party	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
1	10.2	16.1	7.2	-	16.3	6.5
2	26.2	18.3	30.4	-	26.0	26.3
3	14.2	11.8	14.9	100.0	13.5	14.6
4	15.3	14.0	16.0	-	14.4	15.8
5	5.1	5.4	5.0	-	7.7	3.5
6	9.8	10.8	9.4	-	9.6	9.9
7	3.3	1.1	4.4	-	-	5.3
8	4.0	3.2	4.4	-	3.8	4.1
9	3.3	5.4	2.2	-	3.8	2.9
10	2.2	3.2	1.7	-	-	3.5
11-15	2.9	5.5	1.8	-	2.9	3.6
17-25	2.3	3.3	1.8	-	-	3.0
26+	1.5	2.2	1.2	-	2.0	1.2
	100.0*	100.0	100.0	100.0	100.0	100.0
Average party size	4.8	5.4	4.5	3.0	4.2	5.2

* may not total to 100.0% due to rounding

respectively. American parties had an average 4.5 persons followed by local parties with 4.2 persons.

The 275 parties interviewed while visiting the St. Croix Waterway represented a total of 740 American visitors, 507 Canadians and three (3) Germans for a total of 1,250 visitors. Of these visitors, 65.1% were male; nearly double the number of females (Table 6.8). American parties were much more male dominated than were Canadian parties.

The bulk of all visitors were in the 25-49 year age group, regardless of sex, citizenship or user type (Table 6.7). American visitors tended to be somewhat older than Canadian visitors and their party composition was, consequently, quite different (Table 6.9). Local user parties tended to be more balanced in terms of males and females and across all age groups compared with non-local parties.

(48.4%) of all Canadian visitor parties were families while nearly half of all American parties were adults only. Similarly, local user parties were primarily families (47.1%) and non-local users were adults only (47.4%).

6.3.3 Previous Visits to the St. Croix Waterway

Only 13.1% of all respondents had never visited the Waterway before (Table 6.10).

TABLE 6.8: Percent of visitors by age and sex.

	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Sex						
Male	65.1	57.0	70.8	33.3	58.9	68.1
Female	34.8	43.0	29.2	66.7	41.1	31.9
	100.0*	100.0	100.0	100.0	100.0	100.0
Age						
12 years of age or under	17.8	23.7	13.8	33.3	30.0	12.0
13-18 years	15.4	17.9	13.8	-	18.2	14.1
19-24 years	9.7	13.8	7.0	-	6.6	11.3
25-49 years	45.8	39.9	50.0	66.7	36.4	50.3
50+ years	11.3	5.1	15.4	-	8.8	12.3
	100.0	100.0	100.0	100.0	100.0	100.0
Sex and Age						
Male						
12 years of age and under	16.3	19.7	14.5	-	29.2	11.0
13-18 years	16.1	19.7	14.1	-	19.2	14.8
19-24 years	8.4	12.5	6.1	-	5.8	9.4
25-49 years	48.0	42.2	51.1	100.0	35.8	53.1
50+ years	11.2	5.9	14.1	-	10.0	11.7
	100.0	100.0	100.0	100.0	100.0	100.0
Female						
12 years of age and under	20.6	28.9	12.0	50.0	31.1	14.1
13-18 years	14.2	15.6	13.0	-	16.8	12.6
19-24 years	12.4	15.6	9.3	-	7.8	15.2
25-49 years	41.5	35.8	47.2	50.0	37.1	44.2
50+ years	11.2	4.1	18.5	-	7.2	13.6
	100.0	100.0	100.0	100.0	100.0	100.0

*may not total 100.0% due to rounding

TABLE 6.9: Party composition by citizenship and user type (in percent of visitor parties).

		Citizenship			User Type	
Party Composition	All Respondents	Can.	Amer.	Other	Local	Non Local
Alone	9.5	15.1	6.6	-	14.4	6.4
Adults Only	40.0	23.7	48.6	-	28.8	47.4
Family	37.8	48.4	32.0	100.0	47.1	32.2
Mixed adults and children	6.9	9.7	5.5	-	6.7	7.0
Organized group	5.5	3.2	6.6	-	2.9	7.0
	100.0*	100.0	100.0	100.0	100.0	100.0

*may not total 100.0% due to rounding

TABLE 6.10: Previous visits to the St. Croix Waterway by citizenship and user type (in percent of visitor parties).

Previous Visit To the SCWRA	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
No previous visit	13.1	5.4	16.6	100.0	1.0	20.5
Previous visit in 1986	48.0	66.7	38.7	-	89.4	23.4
Previous visit prior to 1986	38.5	28.0	44.2	-	9.6	56.1
	100.0*	100.0	100.0	100.0	100.0	100.0

*may not total 100.0% due to rounding.

6.3.4 Trip Planning

Since most visitors to the study area were local users or previous visitors to the Waterway, it was not surprising that most did not indicate an information source used in planning their trip (Table 6.11).

Most visitors to the Waterway planned and actually spent one day within the study area (Table 6.12), particularly Canadian and local user visitor parties. American and non-local visitors tended to plan and actually spend more days, generally from two to seven days. Very few parties planned or spent more than seven days.

The average length of stay of American visitors was 3.4 days compared with only 1.6 days for Canadian visitors. Local visitor parties spent an average of 1.2 days visiting the Waterway while non-local visitors spent 3.7 days. The average length of stay of all recreational visitor parties was 2.8 days.

Based on the average length of stay and the average party size of each of the party types. Visitor parties interviewed consumed a minimum of 3,643 recreation days on the Waterway. This minimum estimate does not account for repeat visits by many party members. Of these recreation days 823.8 days (22.6%) were consumed by Canadians compared with 2,813.2 days (77.2%) by American visitors. Other

TABLE 6.11: Information sources consulted in planning the recreational visit to the St. Croix Waterway (in percent of visitor parties).

Information Sources	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Friends or relatives	10.6	5.4	13.3	-	2.9	15.2
Province of New Brunswick toll-free travel information telephone number	0.4	-	0.6	-	-	0.6
Georgia-Pacific personnel	2.2	-	3.3	-	-	3.5
Province of New Brunswick forest rangers	-	-	-	-	-	-
Maine Geographic Canoeing Map	1.1	-	1.7	-	-	1.8
The Maine Atlas	7.6	-	11.6	-	-	12.3
The AMC River Guide	4.7	-	7.2	-	-	7.6
Maine Publicity Bureau	0.4	-	0.6	-	-	0.6
Maine Forest Service	1.5	-	2.2	-	-	2.3
Other	4.7	3.2	5.0	100.0	1.0	7.0
None of the above	78.6	92.5	71.8	-	96.2	67.8
	100.0*	100.0	100.0	100.0	100.0	100.0

*may not total 100.0% due to rounding

TABLE 6.12: Number of days planned and actually spent by recreational parties visiting the St. Croix Waterway (in percent of visitor parties).

		Citizenship			User Type	
Number of Days Planned	All Respondents	Can.	Amer.	Other	Local	Non Local
1	49.8	75.3	37.0	-	88.5	26.3
2	14.2	15.1	13.3	100.0	7.7	18.1
3	8.0	1.1	11.6	-	1.9	11.8
4	8.4	3.2	11.0	-	-	13.5
5	2.5	1.1	3.3	-	-	4.1
6	3.3	-	5.0	-	-	5.3
7	8.0	1.1	11.6	-	1.0	12.3
8	0.7	-	0.6	-	-	1.2
9	0.4	-	0.6	-	-	0.6
10	0.7	-	1.1	-	-	1.2
14	2.9	2.2	3.3	-	-	4.7
21	0.4	-	0.6	-	-	0.6
Did not state	0.7	1.1	1.1	-	1.0	0.6
	100.0	100.0	100.0	100.0	100.0	100.0
Number of Days Actually Spent						
1	49.8	76.3	36.5	-	88.5	26.3
2	14.5	12.9	14.9	100.0	8.7	18.1
3	6.9	2.2	9.4	-	1.0	10.5
4	9.5	4.3	12.2	-	1.0	14.6
5	2.5	1.1	3.3	-	-	4.1
6	2.9	-	4.4	-	-	4.7
7	8.0	1.1	11.6	-	1.0	12.3
8	0.7	-	1.1	-	-	1.2
9	0.4	-	0.6	-	-	0.6
10	0.7	-	1.1	-	-	1.2
14	2.6	1.1	3.3	-	-	4.1
21	-	-	-	-	-	-
Did not state	1.5	1.1	1.7	-	-	12.3
	100.0*	100.0	100.0	100.0	100.0	100.0
Average length of stay (number of days)	2.8	1.6	3.4	2.0	1.2	3.7

* may not total 100.0% due to rounding

visitors accounted for only six (6) recreation days (0.2% of all days). In terms of local and non-local visitors, non-local visitors accounted for a minimum of 437.2 recreation days (12.0%) compared with non-locals who consumed an estimated 3,205.8 days (88.0%).

6.3.5 Means of Transportation to the Waterway

Personal cars and trucks/vans were the primary means of transportation to the study area regardless of citizenship or user type (Table 6.13).

6.3.6 Fire Permits

Very few respondents obtained a fire permit prior to visiting the study area (Table 6.14). Many parties may, in fact, have not required a permit, however, if no fires were

TABLE 6.13: Means of transportation to the St. Croix Waterway (in percent of visitor parties).

Vehicle Type and Ownership	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Owned						
Car	48.0	52.7	45.9	-	46.2	49.1
Truck/Van	44.7	39.8	47.5	-	45.2	44.4
Recreational Vehicle	1.1	2.2	0.6	-	1.0	1.2
Motorcycle	0.7	1.1	0.6	-	1.9	-
Jeep/Dune Buggy	0.4	-	0.6	-	-	0.6
Other	2.9	2.2	3.3	-	5.8	1.2
Rental						
Car	1.1	-	1.1	100.0	-	1.8
Truck/Van	0.7	1.1	0.6	-	-	1.2
Recreational Vehicle	-	-	-	-	-	-
Motorcycle	-	-	-	-	-	-
Jeep/Dune Buggy	-	-	-	-	-	-
Other	0.4	1.1	-	-	-	0.6
	100.0*	100.0	100.0	100.0	100.0	100.0

*may not total 100.0% due to rounding

TABLE 6.14: Visitor parties with fire permits (in percent).

Fire Permit	All Respondents	Citizenship Can.	Citizenship Amer.	Citizenship Other	User Type Local	User Type Non Local
Yes	4.7	1.1	6.6	-	-	7.6
No	92.0	94.6	90.6	-	96.2	89.5
Did not state	3.3	4.3	2.8	-	3.8	2.9
	100.0*	100.0	100.0	100.0	100.0	100.0

*may not total 100.0% due to rounding

planned or made. This is probably particularly true for the many Canadian and local user parties that visited the study area for only one day to participate in picnicking, swimming, etc..

6.3.7 Drinking Water

The majority of respondents did not use drinking water or drank fluids other than water (Table 6.15).

One of the objectives in asking this question was to determine the location of springs. Very few respondents used spring water, however, and none identified their location.

6.4 RECREATIONAL ACTIVITY PARTICIPATION PATTERNS

6.4.1 Recreation Activities Engaged In

Respondents were asked to identify all those activities they engaged in while visiting the study area. Since all respondents were recreational visitors, it was not surprising that slightly more than half (51.7%) listed sightseeing/relaxing/pleasure (Table 6.16). Angling, swimming, canoeing, and camping were the most popular

TABLE 6.15: Drinking water used by visitor parties (in percent).

Source of Drinking Water	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Untreated lake/ river water	7.3	3.2	9.4	-	1.9	10.5
Boiled lake/ river water	7.3	4.3	8.8	-	1.9	10.5
Lake/river water treated with purification tablets	0.4	-	0.6	-	-	0.6
Carried in water	19.3	20.4	18.8	-	15.4	21.6
Spring water	1.1	1.1	1.1	-	1.0	1.2
Other	1.1	1.1	0.6	100.0	-	1.8
Did not use drinking water*	62.2	67.7	59.7	-	77.9	52.6
Did not state	1.8	2.2	1.7	-	1.9	1.8
	100.0**	100.0	100.0	100.0	100.0	100.0

*includes all those parties who drink fluids other than water
**may not total 100.0% due to rounding

TABLE 6.16: Recreational activities participated in by visitor parties (in percent).

		Citizenship			User Type	
	All Respondents	Can.	Amer.	Other	Local	Non Local
Sightseeing/ relaxing/pleasure	51.7	46.2	54.1	100.0	26.0	67.3
Canoeing	25.1	20.4	27.6	-	7.7	35.7
Canoeing with motor	6.9	2.2	9.4	-	3.9	8.8
Kayaking	2.2	4.3	1.1	-	1.9	2.3
Non-motorized boating	1.1	1.1	1.1	-	1.0	1.2
Boating with 9.9 hp motor or less	9.8	6.5	11.6	-	3.9	13.5
Boating with 10 hp motor or more	13.5	4.3	18.2	-	8.7	16.4
Camping	20.7	15.1	23.2	100.0	5.8	29.8
Angling	62.6	34.4	77.4	-	49.0	70.8
Hiking	3.3	1.1	3.8	100.0	1.0	4.7
Picknicking	13.5	20.4	9.9	-	11.5	14.6
Sailboating	0.4	-	0.6	-	-	0.6
Sailboarding	0.4	1.1	-	-	-	0.6
Birdwatching	10.9	4.3	14.4	-	2.9	15.8
Nature study	4.7	3.2	5.5	-	1.9	6.4
Berrypicking	2.9	2.2	3.3	-	-	4.7
All terrain vehicles	0.4	-	0.6	-	-	0.6
Swimming	36.7	51.6	28.7	100.0	42.3	33.3
Waterskiing	0.7	-	1.1	-	-	1.2
Hunting	-	-	-	-	-	-
Other	1.8	2.2	-	-	1.0	-
	100.0*	100.0	100.0	100.0	100.0	100.0

* May not total 100.0% due to rounding.

activities but there were distinct differences in participation by Canadians and Americans and by user type.

More than twice the number of American parties engaged in angling (77.4%) and all forms of boating (69%) than did Canadians, while Canadians participated nearly twice that of Americans in swimming (51.6%) and picnicking (20.4%). These activity selections are in keeping with the differences in party composition and party characteristics.

Nearly half (49.0%) of all local users participated in angling and another 42.3% participated in swimming. All other activities were of significantly lesser importance. Non-local user activity participation patterns were very different from those of local users. Non-local user parties had much higher participation rates in angling (70.8%), sightseeing/relaxing/pleasure (67.3%), canoeing (35.7%), and camping (29.8%) than did local users.

6.4.2 Primary Trip Purpose

Respondents were asked to identify the one recreational activity which was their prime reason for visiting the Waterway. Angling (39.3% of all visitor parties), followed by sightseeing/relaxing/pleasure (22.9%), swimming (14.9%) and canoeing (14.5%) were the primary recreational activities/trip purpose of all respondents (Table 6.17). More importantly, however, and in keeping with all the activities engaged in, were the differences by citizenship and by user type. Slightly more than half (51.9%) of all American parties cited angling as their primary activity followed by sightseeing/relaxing/pleasure (20.4%) and canoeing (16.0%). Canadian parties did not visit the study area overwhelmingly for any one specific activity but rather a variety of activities: swimming (26.9%), sightseeing/relaxing/pleasure (26.9%), angling (15.1%), and canoeing (11.8%). Local users cited angling (35.6%) and swimming (33.7%) as their primary activities while non-local parties cited angling (41.5%), sightseeing/relaxing/pleasure (27.5%) and canoeing (21.1%).

6.4.3 Canoeing/Kayaking Abilities and Expectations

Of the visitor parties who participated in canoeing (25.1%), the majority rated their personal skill level as intermediate or expert (Table 6.18).

TABLE 6.17: Primary recreational activities of parties visiting the St. Croix Waterway (in percent).

Primary Recreational Activity	All Respondents	Citizenship (%)			User Type	
		Can.	Amer.	Other	Local	Non Local
Sightseeing/ relaxing/pleasure	22.9	26.9	20.4	100.0	15.4	27.5
Canoeing	14.5	11.8	16.0	-	3.8	21.1
Kayaking	1.5	4.3	-	-	1.9	1.2
Boating with 10 hp motor or more	1.1	2.2	0.6	-	1.9	0.6
Camping	1.1	2.2	0.6	-	1.9	0.6
Angling	39.3	15.1	51.9	-	35.6	41.5
Picnicking	3.6	8.6	1.1	-	5.8	2.3
Sailboating	0.4	-	0.6	-	-	0.6
Sailboarding	0.4	1.1	-	-	-	0.6
Swimming	14.9	26.9	8.8	-	33.7	3.5
Other	0.4	1.1	-	-	-	0.6
	100.0*	100.0	100.0	100.0	100.0	100.0

* May not total 100.0% due to rounding.

TABLE 6.18: Canoeing/kayaking ability by summer recreational visitors parties who participated in canoeing/kayaking while visiting the St. Croix Waterway (in percent of visitor parties).

Canoeing/Kayaking Ability	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Canoeing						
Beginner	4.0	1.1	5.5	-	-	6.4
Intermediate	12.4	11.8	12.7	-	4.8	17.0
Expert	8.4	6.5	9.4	-	2.9	11.7
Did not state**	75.3	80.6	72.4	100.0	92.3	64.9
	100.0*	100.0	100.0	100.0	100.0	100.0
Kayaking						
Beginner	0.4	1.1	-	-	-	0.6
Intermediate	1.5	2.2	1.1	-	1.0	1.8
Expert	0.4	1.1	-	-	1.0	-
Did not state**	97.8	95.7	98.9	100.0	98.1	97.7
	100.0	100.0	100.0	100.0	100.0	100.0

* May not total 100.0 % due to rounding.

** Did not state includes all those parties who did not participate in canoeing/kayaking.

Very few respondents participated in kayaking (2.2%). Of the those who did, most rated their skill level as intermediate.

Visitor parties who participated in canoeing or kayaking and had never visited the study area before were asked to describe their expectations of the canoeing/kayaking water prior to their visit. No attempt was made to define for the respondent the expectation categories: flatwater, beginner whitewater and intermediate whitewater. Of those who participated in canoeing/kayaking and had never visited the Waterway before, the majority indicated that they had expected beginner whitewater and intermediate water (Table 6.19).

6.4.4 Angler Profile and Success Rate

Angling was clearly the most popular recreational activity of visitor parties (62.6%) to the St. Croix Waterway, especially American parties (77.4%). Angling data collected was based on the day of the interview only.

The average number of people fishing per party was 1.7 while the average number of successful anglers was 0.9

TABLE 6.19: Visitor expectations of the canoeing/kayaking water available on the St. Croix Waterway (in percent of visitor parties who participated in canoeing/kayaking).

Expectations of Canoe/Kayak Water	All Respondents	Citizenship Can.	 Amer.	 Other	User Type Local	 Non Local
Flatwater	1.5	1.1	1.7	-	-	2.3
Whitewater - beginner	3.3	1.1	4.4	-	-	5.3
Whitewater - intermediate	2.9	1.1	3.9	-	-	4.7
Did not state*	92.4	96.8	90.1	100.0	100.0	87.7
	100.0**	100.0	100.0	100.0	100.0	100.0

* Includes all those visitor parties who had visited the Waterway before the interview visit regardless of their participation in canoeing/kayaking.

**May not total 100.0% due to rounding.

(Table 6.20). American parties had more than double the number of anglers (2.1 anglers per party) than did Canadian parties (0.8 anglers per party) and their success rate was better probably because their total angling effort (total number of hours fished by all anglers per party) was so much greater (9.0 hours) than that of Canadian parties (1.6 hours). Similarly, non-local visitors had double the number of anglers (2 anglers per party) than did local user parties but their average catch ratio per party (0.55) was not quite as good as that of local parties (0.62) despite a much higher angling effort.

The average catch ratio for all angling parties was 0.56 : 0.57 for American parties, 0.51 for Canadian parties, 0.62 for local visitors and 0.55 for non-local visitors.

6.5 RECREATIONAL TRAVEL PATTERNS WITHIN THE STUDY AREA

6.5.1 Travel Zones

To monitor distribution of recreational use and to differentiate between lake users and river users, the study area was subdivided into ten recreational travel/activity zones (Map IV). These zones essentially correspond with the

TABLE 6.20: Profile and success rate of angler parties visiting the St. Croix Waterway (in percent of angler parties).

	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Average number of people fishing per party	1.7	0.8	2.1	-	1.0	2.0
Average number of successful anglers per party	0.9	0.4	1.2	-	0.6	1.1
Average catch ratio per party	0.56	0.51	0.57	-	0.62	0.55
Average angling effort per party (total number of hours fished per party)	6.5	1.6	9.0	-	2.5	8.9
Average catch per party per day						
Smallmouth Bass	2.8	0.7	3.9	-	1.2	3.8
Salmon	0.2	0.0	0.3	-	0.1	0.3
Brook Trout	0.1	0.0	0.1	-	-	0.1
Lake Trout	0.0	0.0	0.0	-	-	-
White Perch	0.6	0.1	0.9	-	0.4	0.7
Pickeral	0.3	0.1	0.5	-	0.2	0.4
Brown Bullhead	0.0	0.0	0.0	-	-	-
Other	0.4	0.2	0.5	-	0.3	0.5

activity zones identified in the Recreational Waterway Inventory (Whittingham and Weyman, 1984:213) which were defined on the basis of the Waterway's natural and artificial topography. For the purposes of this study, however, Activity Zone 7 in the Recreational Waterway Inventory was subdivided at Loon Bay, thus creating ten zones rather than the original nine.

The majority of recreational visitors (58.5%) were river users, travelling primarily within Zones 7 and 8 (Table 6.21). River use by all visitors decreased dramatically after Grand Falls when the river essentially becomes an arduous stretch of flatwater with long difficult portages around dams.

Lake use was distinctively different. Canadian visitor parties tended to use North Lake (Zone 1) and central and lower Spednic Lake and Palfrey Lake (Zone 6), while American parties concentrated their use throughout all of East Grand Lake (Zones 2 and 3). Zones 4 and 5 received very little use. Non-local visitors used Zones 1, 2 and 3 to greater extent than did local visitors who used Zone 6 to a greater degree. Much of the lake recreational use patterns are very clearly a consequence of access.

TABLE 6.21: Distribution of recreational use by travel zones for recreational visitor parties (in percent).

Travel Zones	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Zone 1	9.1	16.1	5.0	100.0	1.9	13.5
Zone 2	11.6	1.1	17.1	-	4.8	15.8
Zone 3	14.2	5.4	18.9	-	10.6	16.4
Zone 4	1.1	-	1.7	-	1.0	1.2
Zone 5	4.7	2.2	6.1	-	1.0	7.0
Zone 6	14.6	26.9	8.3	-	19.2	11.7
Zone 7	27.6	26.9	28.2	-	13.5	36.3
Zone 8	30.9	21.5	35.9	-	36.5	27.5
Zone 9	12.0	5.4	15.5	-	15.4	9.9
Zone 10	2.2	4.3	1.1	-	3.9	1.2

*Total does not equal 100% because visitor parties may have travelled through more than one zone

Americans, for example, have much easier access to East Grand Lake off Highway 1 than do Canadians who have readier access to Zones 1 and 6.

6.5.2 Entry and Exit Points Used

Table 6.22 indicates the entry and exit points along the St. Croix Waterway used by those respondents surveyed. It should be noted that with the exception of a very few parties, all respondents entered and exited the study area at the survey sites used by this study.

In keeping with the distribution of travel along the Waterway, St. Croix/Vanceboro is the primary entry point for river users and Loon Bay and Grand Falls Dam are the primary exit points. Canadian visitors tended to use North Lake Provincial Park as an entry and exit point and Forest City for access to the Chiputneticook Lakes. River use by Canadians was clearly from St. Crcix/Vanceboro to Grand Falls Dam and at Milltown. American visitors generally used all the survey sites on the lakes relatively equally for both entering and exiting the Waterwav. River use was predominantly from St. Croix/Vanceboro to Grand Falls Dam and to a lesser extent at Milltown. American visitor parties also used the Grand Falls Flowage to a greater

TABLE 6.22: Percent of recreational visitor parties using various entry and exit points along the St. Croix Waterway

	Total		Citizenship				User Type			
			Canadian		American		Local		Non Local	
	Entry	Exit	Entry	Exit	Entry	Exit	Entry	Exit	Entry	Exit
North Lake Provincial Park	7.3	6.5	15.1	15.1	2.8	1.7	1.9	1.9	10.5	9.4
Fosterville	1.5	1.8	-	-	2.2	2.8	-	-	2.3	2.9
Butterfield Landing	2.5	2.2	-	-	3.9	3.3	1.0	1.0	3.5	2.9
Greenland Point	4.7	4.7	-	-	7.2	7.2	8.7	8.7	2.3	2.4
Forest City	4.0	4.7	4.3	5.4	3.9	4.4	1.9	1.9	5.3	6.5
Forest City Landing	4.0	3.3	2.2	-	5.0	5.0	1.0	1.0	5.8	4.7
Spruce Mountain Landing	0.4	0.4	-	-	0.6	0.6	-	-	0.6	0.6
Spednic Lake Road	0.7	0.7	2.2	2.2	-	-	-	-	1.2	1.2
St. Croix/Vanceboro	30.5	13.5	37.6	25.8	27.1	7.2	25.0	21.2	33.9	8.8
Little Falls	1.5	4.7	1.1	5.4	1.7	4.4	1.0	2.9	1.8	5.9
Beaconsfield Road	4.0	2.9	10.8	7.5	0.6	0.6	6.7	5.8	2.3	1.2
Loon Bay	1.5	11.3	-	8.6	2.2	12.7	-	1.9	2.3	16.5
Grand Falls Dam	12.4	18.9	17.2	20.4	9.9	18.2	21.2	22.1	7.0	17.1
Woodland	5.8	6.5	-	1.1	8.8	9.4	4.8	5.8	6.4	7.1
Milltown	6.5	5.8	9.7	8.6	5.0	4.4	12.5	11.5	2.9	2.4
Greenland Cove Campground	0.7	0.7	-	-	1.1	1.1	-	-	1.2	1.2
Greenland Cove Camps	1.1	1.1	-	-	1.7	1.7	-	-	1.8	1.8
Rideouts	2.5	2.5	-	-	3.9	3.9	-	-	4.1	4.1
Princeton Bridge	5.1	5.1	-	-	7.7	7.7	11.5	11.5	1.2	1.2
Squirrel Point	2.5	2.5	-	-	3.9	3.9	2.9	2.9	2.3	2.4
Other	0.7	-	-	-	1.1	-	-	-	-	-
	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*May not total 100.0% exactly due to rounding.

extent than did Canadian parties, with access at Grand Falls Dam, Princeton Bridge and Squirrel Point.

Local user visitor parties used Greenland Point as the major access and exit point for the Lakes, and St. Croix/ Vanceboro and Grand Falls Dam as the access and exit points respectively for river use. River use was relatively high at Milltown by local users and throughout Grand Falls Flowage. Non-local user parties tended to use all the Lakes' access points relatively equally and river use was predominantly from St. Croix/Vanceboro to Loon Bay and Grand Falls. Non-local user parties did not use the River at Milltown or the Grand Falls Flowage to the same extent as local user parties.

6.5.3 Accommodations

Nearly half (47.3%) of all visitors did not indicate overnight accommodations because they did not spend a night in the study area (Table 6.23). This is in keeping with the lengths of stay indicated by citizenship and user type (see Section 6.3.4). Most Canadian and local visitor parties, for example, visited the Waterway for only one day, while American visitor parties spent several days.

TABLE 6.23: Accommodation used by overnight visitor parties to the St. Croix Waterway (in percent).

Accommodation	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Motel	-	-	-	-	-	-
Private camp, cottage or residence	15.3	8.6	19.3	-	6.7	21.1
Commercial (rented) camp or cottage	5.5	-	8.3	-	-	8.8
Commercial lodge	8.7	-	13.3	-	-	14.0
New Brunswick Provincial Park	0.7	-	0.6	100.0	-	1.2
Camped at a designated campsite	17.5	14.0	19.3	-	5.8	24.6
Camped at an undeveloped campsite	1.8	1.1	2.2	-	-	2.9
Commercial campground	2.2	1.1	2.8	-	-	3.5
Other accommodation	1.8	2.2	1.7	-	1.0	2.3
Did not state	47.3	73.1	34.3	-	86.5	23.4
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

Of the visitors who did spend the night within the study area, the majority camped at a designated campsite (17.5%), a private camp, cottage or residence (15.3%) or at a commercial lodge (8.7%). Motels were not used by any of the respondents.

6.5.4 Recreational Use Of Lakes Within the St. Croix Waterway Recreation Area (SCWRA)

Very few visitors to the St. Croix Waterway left the immediate study area to participate in recreational activities available at lakes scattered throughout the St. Croix Waterway Recreational Area (SCWRA). Only 1.1% of all Canadian parties visited La Coote Lake, Sixth Lake, Fifth Lake and East Brook Lake.

6.6 PARTY HEAD PROFILE

One individual from each visitor party was asked to respond to the personal interview questionnaire. Socio-economic data was collected on the head of the visitor party in order to provide more comprehensive detail on the type of visitor to the study area. This information will be invaluable in planning for and in marketing the Waterway to specific types of visitors.

6.6.1 Occupation

The heads of visitor parties came from very diverse occupations (Table 6.24). The majority (52.8%) were "white collar" employees particularly in the service and managerial fields. "Blue-collar" employees accounted for only 23.6% of all party heads. Students and retirees made up 13.8% of all party heads. Very few party heads were unemployed although, as expected, slightly more local users were not employed.

6.6.2 Number of Weeks Annual Vacation

Nealy half (49.4%) of all party heads had two to four weeks' annual vacation (Table 6.25). Americans and non-local users, however, generally had more annual weeks' vacation than did Canadians or local users.

6.6.3 Total Family Income

In keeping with the differences in occupations of Canadians and Americans and of local and non-local users, American non-local party heads tended to have higher total family incomes (Table 6.26). Fully one-quarter of these users had an income level of $40,000 or more compared with only 5.8%

TABLE 6.24: Occupations of visitor party heads (in percent of party heads).

Occupation	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Engineering and Science	4.0	3.2	4.4	-	2.9	4.7
Managerial	10.2	7.5	11.6	-	4.8	12.3
Law and Social Science	1.1	-	1.7	-	-	1.8
Teaching and Education	9.1	4.3	11.6	-	4.8	11.7
Medicine & Health	5.1	1.1	7.2	-	3.8	6.4
Religion	0.4	1.1	-	-	-	0.6
Arts & Literature	1.8	2.2	1.7	-	1.9	1.8
Clerical	1.5	-	2.2	-	1.9	1.2
Sales	4.7	6.5	3.9	-	4.8	4.1
Service	14.9	21.5	11.6	-	19.2	12.9
Forestry	3.6	1.1	5.0	-	2.9	4.1
Farming	1.1	1.1	1.1	-	1.0	1.2
Mining	0.4	1.1	-	-	-	0.6
Processing	2.5	6.5	0.6	-	6.7	-
Machining	2.2	-	3.3	-	-	3.5
Manufacturing	5.8	6.5	5.5	-	4.8	6.4
Construction	5.8	3.2	7.2	-	5.8	5.8
Transportation	2.2	4.3	0.6	100.0	1.0	2.9
Military	1.1	1.1	1.1	-	1.0	1.2
Domestic	5.8	9.7	3.9	-	13.5	1.8
Student	6.9	9.7	5.5	-	5.8	7.6
Retired	6.9	4.3	8.3	-	7.7	6.4
Unemployed	2.2	3.2	1.7	-	4.8	1.2
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

TABLE 6.25: Number of weeks annual vacation of party heads (in percent).

Number of Weeks Vacation	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
1 week	9.8	11.8	8.8	-	11.5	8.8
2 weeks	20.7	24.7	18.8	-	26.0	17.5
3 weeks	12.0	8.6	13.8	-	11.5	12.3
4 weeks	16.7	11.8	19.3	-	7.7	22.2
5 weeks	3.6	1.1	5.0	-	1.9	4.7
6 weeks	2.2	2.2	2.2	-	1.9	2.3
7 weeks	0.4	-	0.6	-	-	0.6
8+ weeks	18.5	20.4	17.1	100.0	17.3	19.3
Retired	6.5	4.3	7.7	-	7.7	5.8
Did not state	9.5	15.1	6.6	-	14.4	6.4
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

TABLE 6.26: Total family income of heads of recreational visitor parties (in percent).

	Citizenship			User Type	
Total Family Income	Can.	Amer.	Other	Local	Non Local
Canadian $					
Under $9,000	9.7		-	3.8	2.9
$ 9,000 - $19,999	21.5		-	14.4	2.9
$20,000 - $29,999	12.9		-	8.7	1.8
$30,000 - $39,999	15.1		-	6.7	4.1
$40,000 +	12.9		-	1.9	5.8
Did not state	26.9		-	14.4	6.4
U.S. $					
Under $10,000		6.6	-	3.8	4.7
$10,000 - $19,999		13.8	-	12.5	7.0
$20,000 - $29,999		17.7	-	13.5	10.5
$30,000 - $39,999		19.3	100.0	9.6	15.2
$40,000 +		25.4	-	3.8	25.1
Did not state		15.5	-	6.7	12.3
	100.0*	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

of Canadian non-locals. American local users also had family incomes considerably greater than Canadian locals.

6.6.4 Outdoor Recreational Club Memberships

Few party heads held memberships in various outdoor recreational clubs (Table 6.27). More American and non-local party heads held memberships, however. Of those respondents who did belong to a variety of clubs, memberships were more prevalent in canoeing and fish and game clubs followed by naturalist/conservation and rod and gun clubs.

6.6.5 Recreational Visits to Alternative River Systems

Outdoor recreationists generally participate in their chosen activity/activities at a variety of comparable (i.e., semi-wilderness) sites. Party heads were questioned as to visits to alternative river systems in New Brunswick and Maine during the previous five years. The rivers selected were those that offer comparable recreational values to the St. Croix Waterway. The objective of this question was two fold: to determine the propensity of users to visit comparable systems and to determine the relative appeal of the various alternatives.

TABLE 6.27: Club memberships by heads of recreational visitor parties (in percent).

Club Membership	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Canoe club	8.4	5.4	9.9	-	1.9	12.3
Rod and gun club	6.9	6.5	7.2	-	7.7	6.4
Naturalist/ conservation club	6.9	4.3	8.3	-	1.9	9.9
Fish and game club	8.4	5.4	9.9	-	6.7	9.4
Salmon club	3.6	4.3	3.3	-	3.9	3.5
Other	4.4	3.2	4.4	-	4.8	4.1
None of the above	70.2	79.6	65.2	100.0	76.9	66.1
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

Nearly half (46.9%) of all visitor party heads had not visited any of the alternative river systems during the previous five years (Table 6.28). As expected, of those party heads who had visited the various alternative river systems, Canadians had visited rivers in New Brunswick while Americans had visited Maine rivers. Three rivers, however, attracted both Canadians and Americans: the Saint John, West Branch Penobscot and Machias Rivers.

6.7 VISITOR EXPENDITURES

6.7.1 Expenditure Ranges by Visitor Parties

In nearly all cases, Canadian visitor parties spent Canadian currency while American parties spent U.S. currency (Table 6.29).

Given the high use by local Canadians, and the typically one-day visit, it is not surprising that these visitor parties spent very little on a visit to the study area. One-quarter of all Canadians spent less than ten dollars ($10.00) and another 34.7% spent $10-39.00. Presumably those parties that spent more were larger in number and visited the Waterway for a longer period of time.

TABLE 6.28: Recreational visits to other New Brunswick and Maine rivers during the past five years by heads of recreational visitor parties (in percent).

	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Allagash River	10.9	-	16.6	-	4.8	14.6
Saint John River	28.0	52.7	15.5	-	28.9	27.5
Miramichi River	14.2	25.8	8.3	-	16.4	12.9
Kedgewick-Restigouche Rivers	3.3	6.5	1.7	-	4.8	2.3
Upsalquitch River	2.6	5.4	1.1	-	2.9	2.3
Nepisiquit River	2.6	5.4	1.1	-	2.9	2.3
Tobique River	6.6	14.0	2.8	-	8.7	5.3
Saco River	9.5	-	14.4	-	1.9	14.0
East Branch Penobscot River	11.3	3.2	15.5	-	6.7	14.0
West Branch Penobscot River	14.6	3.2	20.4	-	4.8	20.5
Machias River (Washington County)	14.6	3.2	20.4	-	12.5	15.8
None of the above	46.9	40.9	49.7	100.0	52.9	43.3
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

TABLE 6.29: Percent of recreational visitor parties by expenditure ranges.

	Citizenship			User Type	
Expenditure Ranges	Can.	Amer.	Other	Local	Non Local
Canadian Currency					
$ 0 - $ 9	25.9	0.6		19.2	3.0
$ 10 - $ 19	13.1			5.0	3.0
$ 20 - $ 29	10.8	0.6		6.8	2.4
$ 30 - $ 39	10.8			2.9	4.2
$ 40 - $ 49	3.3			1.0	1.2
$ 50 - $ 99	5.5			-	3.0
$ 100 - $199	9.9			3.0	3.6
$ 200 - $499	4.4			1.0	1.8
$ 500 - $999	2.2				1.2
$1000 +	1.1			1.0	-
Did not spend Canadian currency		98.9		58.7	77.1
	100.0*	100.0	100.0	100.0	100.0
US Currency					
$ 0 - $ 9	3.3	14.1		6.8	3.6
$ 10 - $ 19		5.2		8.7	3.6
$ 20 - $ 29		4.5		2.9	2.4
$ 30 - $ 39		1.7		1.0	1.2
$ 40 - $ 49		2.3		1.0	1.8
$ 50 - $ 99		8.5		4.0	6.0
$ 100 - $ 199		7.0		-	7.8
$ 200 - $ 499		16.8		1.0	18.6
$ 500 - $ 999		13.8		-	15.0
$1000 - $1499		7.1		-	7.2
$1500 - $1999		3.0		-	3.0
$2000 - $2499		2.9		-	3.0
$2500 - $2999		1.8		-	1.8
$3000 +		1.2		-	1.8
Did not spend US currency	95.7			59.6	24.7
	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding.

American visitors, primarily non-local users, spent more money than did Canadian visitors. Slightly more than one-quarter (27.9%) of all American parties spent $39.00 or less (compared with 60.6% of Canadians) and this was primarily due to local Americans. Fully 30.6% of American parties spent $200-999 on their trip, largely due to expenditures by non-locals. Another 16.8% spent more than $1000 including large parties which had expenses over $2500.00.

6.7.2 Visitor Party Expenditures

Average Expenditures Per Party: Table 6.30 summarizes average party expenditures by type of expenditure and location of expenditure for those visitor parties who spent Canadian currency and those who spent U.S. currency.

The average expenditure by Canadian visitor parties to visit the study area was $71.98 as compared with $550.35 by American visitor parties. This substantial difference in average per party expenditure is primarily due to the fact that Canadian visitors were, by and large, local visitors using the Waterway for one day visits while American parties were, in the majority, non-local visitors who

TABLE 6.30: Average expenditure per party by recreational visitors by currency.

Expenditure Category	Average Expenditure per party	Local Maine	Maine	Local N.B.	N.B.	Else-Where
		Average Expenditure by Location				
Canadian Currency						
Transportation[1]	16.35	0.53	0.18	5.41	8.99	1.24
Accommodation[2]	0.07	0.00	0.00	0.07	0.00	0.00
Food & Beverage:						
in restaurants	2.27	0.09	0.00	1.53	0.65	0.00
in stores	27.96	4.76	0.00	7.61	14.76	0.83
Outdoor Recreation[3]	0.92	0.26	0.00	0.70	0.24	0.35
Outfitter/Guide Services	4.00	0.00	0.00	4.00	0.00	0.00
Recreational Equipment	14.76	0.00	0.00	12.71	1.76	0.29
Rental Equipment[5]	3.92	0.00	0.00	3.45	0.47	0.00
Misc. Merchandise[6]	1.73	0.02	0.00	0.12	0.18	1.41
Total Average Expenditures/Party	71.98	5.66	0.18	34.97	27.05	4.12
American Currency						
Transportation	110.16	9.28	19.38	0.30	0.35	80.85
Accommodation	113.80	50.55	39.71	5.51	0.34	17.69
Food & Beverage:						
in restaurants	23.09	8.03	8.51	0.24	0.43	5.88
in stores	110.95	18.95	71.48	0.37	0.76	19.39
Outdoor Recreation	31.10	16.74	12.70	1.12	0.54	0.00
Outfitter/Guide Services	89.74	20.65	60.91	0.00	0.00	8.18
Recreational Equipment	42.21	1.36	17.05	0.40	0.11	23.29
Rental Equipment	19.65	11.74	3.41	0.31	0.00	4.19
Misc. Merchandise	9.65	2.60	2.96	0.03	0.88	3.18
Total Average Expenditures/party	550.35	139.90	236.11	8.28	3.41	162.65

1 - Transportation including gas, auto repairs, ferry crossings, tolls, airfare, car rental, etc..

2 - Accommodation not including food portion of bill.

3 - Outdoor recreation including fishing permits, bait, guidebooks, maps, etc..

4 - Recreational equipment purchased specifically for this trip including camping, fishing, hiking, boating gear, etc..

5 - Rental equipment including canoes, paddles, etc..

6 - Miscellaneous merchandise including souvenirs, film, boat repairs, etc..

travelled greater distances to the study area and subsequently visited for several days. Comparing average expenditures by local and non-local residents was not possible due to the mix of currencies. It was possible however, to estimate total average expenditures per visit by currency by visitor party type. Local parties spending Canadian currency spent an estimated $53.62 per visit while those spending American currency spent only an estimated $20.67 per visit. Non-local parties spending Canadian currency spent $96.00 per visit compared with $735.00 spent by non-locals spending U.S. currency. These average party expenditures are in keeping with local and non-local recreational visit and activity patterns.

Total Expenditures: Table 6.31 provides estimates of total expenditures by all visitor parties interviewed which spent Canadian currency and by all those parties interviewed which spent American currency. Canadian visitor parties interviewed spent an estimated $6,119.00 while American parties interviewed spent an estimated $96,859.00.

TABLE 6.31: Total expenditures by all recreational visitor parties by currency.

Expenditure Category	Total Expenditures	Total Expenditures by Location				
		Local Maine	Maine	Local NB	N.B.	Else-Where
Canadian Currency						
Transportation	1,390.00	45.00	15.00	460.00	764.00	106.00
Accommodation	6.00	0.00	0.00	6.00	0.00	0.00
Food & Beverage:						
In Restaurant	193.00	8.00	0.00	130.00	55.00	0.00
In Stores	2,377.00	405.00	0.00	647.00	1,255.00	70.00
Outdoor Recreation Expenditures	78.00	22.00	0.00	6.00	20.00	30.00
Outfitter/Guide Services	340.00	0.00	0.00	340.00	0.00	0.00
Recreational Equipment	1,255.00	0.00	0.00	1,080.00	150.00	25.00
Rental Equipment	333.00	0.00	0.00	293.00	40.00	0.00
Misc. Merchandise	147.00	2.00	0.00	10.00	15.00	120.00
Total Expenditures	6,119.00	482.00	15.00	2,972.00	2,299.00	351.00
American Currency						
Transportation	19,388.00	1,633.00	3,411.00	52.00	62.00	14,230.00
Accommodation	20,028.00	8,896.00	6,989.00	969.00	60.00	3,114.00
Food & Beverage:						
In Restaurants	4,063.00	1,413.00	1,497.00	43.00	75.00	1,035.00
In Stores	19,527.00	3,336.00	12,581.00	65.00	133.00	3,412.00
Outdoor Recreation	5,473.00	2,946.00	2,235.00	197.00	95.00	0.00
Outfitter/Guide Services	15,795.00	3,635.00	10,720.00	0.00	0.00	1,440.00
Recreational Equipment	7,429.00	240.00	3,000.00	70.00	20.00	4,099.00
Rental Equipment	3,458.00	2,067.00	600.00	55.00	0.00	736.00
Misc. Merchandise	1,698.00	457.00	521.00	5.00	155.00	560.00
Total Expenditures	96,859.00	24,623.00	41,554.00	1,456.00	600.00	28,626.00

Expenditure Categories: Average visitor party expenditures varied as expected by expenditure category and visitor party type (Table 6.32).

Food and beverages in stores (38.8%), transportation (22.7%) and recreational equipment (20.5%) accounted for the bulk (82%) of expenditures by Canadian visitor parties. American parties, however, spent the greater share of their overall party expenditures on transportation (20.0%), accommodation (20.7%), food and beverages in stores (20.2%) and outfitters/guide services (16.7%) but considerably less proportionately on recreational equipment than did Canadians.

Expenditures by local and non-local visitors closely paralleled the differences in expenditures by Canadians and Americans with a few minor expected variations. Food and beverages in stores (37.1%) and recreational equipment (30.2%) accounted for the major proportion of local party average trip expenditures. Presumably local visitors purchased recreational equipment solely for use on the Waterway and included these expenditures in this category, thereby, explaining these higher proportional equipment

TABLE 6.32: Percent of average expenditures by expenditure category by visitor party types.

Expenditure Category	Percent of Average Expenditure / Visitor Party: Parties Spending Canadian Currency	Parties Spending American Currency	Local	Non Local
Transportation	22.7	20.0	16.1	20.3
Accommodation	0.1	20.7	0.0	20.1
Food & Beverage in restuarant	3.2	4.2	1.1	4.2
Food & Beverage in stores	38.8	20.2	37.1	20.8
Outdoor Recreation	1.3	5.6	4.2	5.4
Outfitter/Guide Services	5.6	16.3	7.4	15.9
Recreational Equipment**	20.5	7.7	30.2	7.7
Rental Equipment	5.4	3.6	3.4	3.7
Miscellaneous Merchandise	2.4	1.8	0.4	1.8
	100.0*	100.0	100.0	100.0

* May not total 100.0% due to rounding.

expenditures than by any other visitor party type. In comparison, non-local visitors devoted the greatest proportion of their expenditures to transportation (20.3%), food and beverages in stores (20.8%), accommodation (20.1%) and outfitter/guide services (15.9%).

Expenditures by Location: Table 6.33 summarizes the distribution of expenditures by location by visitor party type. Nearly all expenditures (86.2%) by Canadian visitor parties were made in New Brunswick: 48.6% in the local New Brunswick region and 37.6% elsewhere in New Brunswick. Only 68.3% of American expenditures were made in Maine: 25.4% in the local Maine region. Fully 29.6% of all American party expenditures were made out of State which was to be expected given the other state residences of the majority of these users.

Since the majority of local users were Canadians, it is not surprising that 63.9% of all local party expenditures were made within local New Brunswick and 25.1% were made within local Maine.

TABLE 6.33: Distribution of expenditures by location by visitor party type.

Expenditure Location	Percent of Average Expenditures/Visitor Party			
	Canadian	American	Local	Non-Local
Local Maine	7.9	25.4	25.1	24.3
Maine	0.3	42.9	4.3	41.6
Local New Brunswick	48.6	1.5	63.9	2.3
New Brunswick	37.6	0.6	6.5	2.7
Elsewhere	5.7	29.6	0.3	29.1
	100.0*	100.0	100.0	100.0

* May not total 100.0% due to rounding.

6.8 VISITOR EXPECTATIONS, SATISFACTION AND SUPPORT FOR MANAGEMENT AND DEVELOPMENT ALTERNATIVES

6.8.1 Visitor Expectations of the St. Croix Waterway

Visitor expectations of a recreational site/facility/ opportunity can readily influence the visitor's satisfaction with his/her experience. Nearly all visitor party respondents, especially Canadian and local user parties, had visited the study area before, thereby, precluding them from this question (Table 6.34).

Visitor parties who had never visited the study area before were asked to describe their expectations of the St. Croix Waterway prior to their visit, based on a scale from 1 to 5 where 1 was defined as "true wilderness" and 5 was defined as "fully serviced recreational facilities (e.g., electricity, showers, etc.)". Since views on wilderness and levels of recreational development vary from one person to another, no attempt was made to define 2, 3 and 4 on the scale.

The majority of Americans and non-local user parties cited 2 and 3 on the scale, which while not definable, can

TABLE 6.34: Recreational visitor expectations of the wilderness/development level of the St. Croix Waterway (in percent of visitor parties).

Visitor Expectations	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Have visited the St. Croix Waterway before	88.0	95.7	84.5	-	99.0	81.3
1 - True Wilderness	1.5	1.1	1.7	-	-	2.3
2	4.4	1.1	5.5	100.0	-	7.0
3	4.0	1.1	5.5	-	1.0	5.8
4	0.7	-	1.1	-	-	1.2
5 - Fully serviced recreational facilities (eg. electricity, showers, etc.)	0.4	-	0.6	-	-	0.6
Did not state	1.0	1.1	0.6	-	-	1.2
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

probably be best described as an expectation of semi-wilderness.

6.8.2 Willingness to Visit Again

Visitor party willingness to visit the study area again is a good indicator of visitor satisfaction with existing recreational opportunities. Nearly all visitors to the study area stated a willingness to visit the Waterway again (Table 6.35).

6.8.3 Willingness to Pay a Camping Fee

Visitor willingness to pay is also a good indicator of visitor satisfaction with existing recreational opportunities. It is unlikely that it would ever be practical to levy a fee for general recreational use of the study area. A camping fee for designated sites throughout the study area is, however, feasible and may be a management technique utilized to control recreational use.

The question on willingness to pay a camping fee was directed to all visitor parties, not just those parties who had participated in camping. Nearly one-third (30.2%) of

TABLE 6.35: Visitor party willingness to visit the St. Croix Waterway again (in percent of visitor parties).

Willingness to visit the St. Croix Waterway again	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
Yes	98.2	100.0	97.2	100.0	100.0	97.1
No	1.1	-	1.7	-	-	1.8
Did not state	0.7	-	1.1	-	-	1.2
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

TABLE 6.36: Recreational visitor party willingness to pay a fee to camp along the St. Croix Waterway (in percent of visitor parties).

Willingness to Pay Camping Fee	All Respondents	Citizenship			User Type	
		Can.	Amer.	Other	Local	Non Local
$10.00 fee	9.8	6.5	11.6	-	10.6	9.4
$ 7.50 fee	4.0	4.3	3.9	-	2.9	4.7
$ 5.00 fee	30.5	33.3	29.3	-	24.0	34.5
$ 2.50 fee	12.0	8.6	13.3	100.0	16.3	9.4
Opposed to any fee	30.2	36.6	27.1	30.2	35.5	26.9
Did not state	13.5	10.8	14.9	-	10.6	15.2
	100.0*	100.0	100.0	100.0	100.0	100.0

* may not total 100.0% due to rounding

all visitor parties were opposed to the imposition of any camping fee (Table 6.36).

6.8.4 Satisfaction with Various Aspects of Visit

Respondents were asked to indicate their satisfaction/ dissatisfaction with various aspects of their visit to the study area. Their responses are summarized in Table 6.37. Responses were analysed by citizenship, user type and by the four primary recreational activity groups (sightseeing/ pleasure/general vacation, canoeists, anglers, swimmers) since activity participation enjoyment can greatly influence the visitors overall satisfaction level. In general, visitor parties were satisfied with all aspects of their visit to the Waterway.

6.8.5 Support for Recreational Management Alternatives

The various recreational management alternatives which were tested for support by residents of the Waterway were also tested for support by recreational visitors in the personal interview questionnaire (Table 6.38). In addition to comparing support by citizenship and user type, support by the four primary recreational activity groups (sightseeing/pleasure/ general vacation, canoeists,

TABLE 6.38: Support for recreational management alternatives for the St. Croix Waterway by recreational visitors (in percent of visitor parties).

Management Alternatives	All Respondents	Citizenship			User Type		Primary Recreational Activity Groups							
							Sightseeing, Pleasure General Vacation		Canoeists		Anglers		Swimmers	
		Can.	Amer.	Other	Local	Non Local	Can.	Amer.	Can.	Amer.	Can.	Amer.	Can.	Amer.
Mandatory pre-registration to camp														
Did not state	3.3	4.3	2.8	-	3.8	2.9	12.0	-	-	-	-	5.3	-	-
Totally opposed	11.6	12.9	11.0	-	10.6	12.3	8.0	10.8	18.2	20.7	21.4	7.4	8.0	12.5
Opposed	37.5	41.9	34.8	100.0	41.3	35.1	44.0	32.4	45.5	37.9	35.7	33.0	40.0	43.8
Indifferent	17.5	14.0	19.3	-	14.4	19.3	16.0	21.6	9.1	10.3	21.4	22.3	12.0	18.8
Supportive	27.3	24.7	28.7	-	28.8	26.3	12.0	32.4	27.3	31.0	21.4	26.6	40.0	25.0
Very supportive	2.9	2.2	2.3	-	1.0	4.1	8.0	2.7	-	-	-	5.3	-	-
Mandatory recreational permits to camp														
Did not state	3.6	4.3	3.3	-	3.8	3.5	12.0	-	-	-	-	6.4	-	-
Totally opposed	5.1	4.3	5.5	-	5.8	4.7	-	5.4	-	10.3	14.3	4.3	4.0	-
Opposed	26.9	30.1	24.9	100.0	31.7	24.0	36.0	18.9	27.3	27.6	28.6	25.5	24.0	25.0
Indifferent	16.0	16.1	16.0	-	8.7	20.5	-	21.6	36.4	24.1	21.4	13.8	20.0	6.3
Supportive	43.6	39.8	45.9	-	47.1	41.5	40.0	51.4	36.4	37.9	28.6	42.6	48.0	68.8
Very supportive	4.7	5.4	4.4	-	2.9	5.8	12.0	2.7	-	-	7.1	7.4	4.0	-
Limiting party size														
Did not state	2.2	2.2	2.2	-	2.9	1.8	8.0	-	-	-	-	4.3	-	-
Totally opposed	7.3	8.6	6.6	-	3.8	9.4	12.0	10.8	27.3	17.2	14.3	2.1	-	-
Opposed	42.2	40.9	43.1	-	53.8	35.1	36.0	43.2	45.5	37.9	28.6	41.5	52.0	68.8
Indifferent	18.5	20.4	17.1	100.0	19.2	18.1	12.0	27.0	9.1	10.3	21.4	16.0	28.0	18.8
Supportive	25.8	25.8	26.0	-	17.3	31.0	24.0	13.5	18.2	31.0	35.7	30.9	20.0	6.3
Very supportive	4.0	2.2	5.0	-	2.9	4.7	8.0	5.4	-	3.4	-	5.3	-	6.3

Limiting length of stay of overnight visitors														
Did not state	2.5	3.2	2.2	-	2.9	2.3	8.0	-	-	-	-	4.3	-	-
Totally opposed	8.4	9.7	7.7	-	4.8	10.5	8.0	10.8	27.3	17.2	14.3	4.3	-	-
Opposed	41.5	45.2	39.8	-	47.1	38.0	36.0	27.0	63.6	41.4	35.7	42.6	60.0	56.3
Indifferent	16.4	20.4	13.8	100.0	18.3	15.2	20.0	18.9	-	3.4	28.6	17.0	16.0	6.3
Supportive	28.0	19.4	32.6	-	26.0	29.2	28.0	37.8	9.1	34.5	7.1	27.7	24.0	37.5
Very supportive	3.3	2.2	3.9	-	1.0	4.7	-	5.4	-	3.4	14.3	4.3	-	-
Increased restrictions on fires														
Did not state	2.9	2.2	3.3	-	1.9	3.5	8.0	-	-	-	-	6.4	-	-
Totally opposed	2.5	3.2	2.2	-	1.9	2.9	8.0	-	9.1	10.3	-	1.1	-	-
Opposed	20.0	12.9	23.8	-	17.3	21.6	12.0	29.7	36.4	37.9	7.1	16.0	8.0	25.0
Indifferent	17.5	9.7	21.0	100.0	11.5	21.1	4.0	18.9	9.1	20.7	14.3	26.6	4.0	-
Supportive	44.4	53.8	39.8	-	50.0	40.9	44.0	43.2	45.5	27.6	50.0	38.3	68.0	62.5
Very supportive	12.7	18.3	9.9	-	17.3	9.9	24.0	8.1	-	3.4	28.6	11.7	20.0	12.5
Mandatory requirement for portable cooking equipment														
Did not state	3.6	2.2	4.4	-	2.9	4.1	-	-	-	-	-	8.5	-	-
Totally opposed	6.9	5.4	7.7	-	4.8	8.2	12.0	8.1	9.1	17.2	-	5.3	4.0	-
Opposed	37.8	28.0	43.1	-	36.5	38.6	20.0	54.1	45.5	62.1	28.6	30.9	24.0	56.3
Indifferent	19.6	17.2	21.0	-	19.2	19.9	12.0	24.3	36.4	3.4	21.4	25.5	12.0	18.8
Supportive	28.4	40.9	21.5	100.0	32.7	25.7	32.0	10.8	9.1	13.8	35.7	27.7	60.0	25.0
Very supportive	3.6	6.5	2.2	-	3.8	3.5	16.0	2.7	-	3.4	14.3	2.1	-	-

Stocking the Waterway														
Did not state	2.9	2.2	2.8	100.0	2.9	2.9	4.0	-	-	-	-	5.3	-	-
Totally opposed	1.8	1.1	2.2	-	1.9	1.8	4.0	2.7	-	3.4	-	2.1	-	-
Opposed	6.9	5.4	7.7	-	9.6	5.3	4.0	5.4	-	6.9	7.1	6.4	4.0	18.8
Indifferent	17.8	18.3	17.7	-	10.6	22.2	8.0	18.9	45.5	37.9	-	11.7	20.0	18.8
Supportive	42.5	46.2	40.9	-	46.2	40.4	48.0	35.1	36.4	37.9	14.3	40.4	60.0	56.3
Very supportive	28.0	26.9	28.7	-	28.8	27.5	32.0	37.8	18.2	13.8	78.6	34.0	16.0	6.3
Mandatory carry in/carry out litter policy														
Did not state	1.8	1.1	2.2	-	1.9	1.8	4.0	-	-	-	-	4.3	-	-
Totally opposed	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Opposed	1.1	2.2	0.6	-	1.9	0.6	-	-	-	-	-	1.1	4.0	-
Indifferent	3.3	7.5	1.1	-	4.8	2.3	8.0	2.7	9.1	-	-	1.1	12.0	-
Supportive	38.5	45.2	34.8	100.0	45.2	34.5	32.0	27.0	36.4	20.7	28.6	36.2	60.0	75.0
Very supportive	55.3	44.1	61.3	-	46.2	60.8	56.0	70.3	54.5	79.3	71.4	57.4	24.0	25.0
Increased patrols for safety and security														
Did not state	2.2	2.2	2.2	-	2.9	1.8	4.0	-	-	-	7.1	4.3	-	-
Totally opposed	1.8	2.2	1.7	-	1.0	2.3	4.0	2.7	9.1	3.4	-	-	-	-
Opposed	20.0	9.7	25.4	-	18.3	21.1	16.0	40.5	18.2	31.0	-	18.1	4.0	25.0
Indifferent	14.2	10.8	15.2	100.0	6.7	18.7	12.0	16.2	18.2	10.3	7.1	19.1	8.0	
Supportive	49.5	59.1	44.8	-	56.7	45.0	36.0	32.4	36.4	44.8	71.4	48.9	80.0	50.0
Very supportive	12.4	16.1	10.5	-	14.4	11.1	28.0	8.1	18.2	10.3	14.3	9.6	8.0	25.0
Regulations/zoning for shoreline development														
Did not state	1.8	1.1	2.2	-	1.9	1.8	4.0	-	-	-	-	4.3	-	-
Totally opposed	1.5	-	2.2	-	1.0	1.8	-	-	-	3.4	-	2.1	-	-
Opposed	7.3	5.4	8.3	-	8.7	6.4	8.0	8.1	-	6.9	-	8.5	4.0	12.5
Indifferent	14.5	20.4	11.6	-	22.1	9.9	20.0	5.4	18.2	3.4	14.3	14.9	24.0	18.8
Supportive	48.0	55.9	43.6	100.0	51.9	45.6	40.0	51.4	72.7	48.3	42.9	36.2	68.0	56.3
Very supportive	26.9	17.2	32.0	-	14.4	34.5	28.0	35.1	9.1	37.9	42.9	34.0	4.0	12.5

anglers, swimmers) was also analysed since these four activity groups made up the largest proportion of users and since some management alternatives may affect one activity user group more than another.

Generally, visitor parties were very supportive of mandatory recreational permits to camp along the Waterway, increased restrictions on fires, stocking the Waterway, mandatory carry in/carry out litter policy, increased patrols for safety and security and regulations/zoning for shoreline development and opposed to mandatory pre-registration to camp on the Waterway limiting party size, limiting the length of stay of overnight visitors and mandatory requirement for portable cooking equipment.

6.8.6 Support for St. Croix Waterway Development Alternatives: Support for the development alternatives tested on the Waterway resident target population were also tested on the recreational visitor target population. Visitors were not asked to indicate degree of support but rather to indicate only those developments they felt were desirable for the study area and immediately adjacent local region (Table 6.39).

TABLE 6.39: Support for alternative developments along the St. Croix Waterway or within the immediate vicinity (in percent of visitor parties).

Development Alternatives	All Respondents	Citizenship			User Type		Primary Recreational Activity Groups			
		Can.	Amer.	Other	Local	Non Local	Sightseeing, Pleasure, General Vacation	Canoeists	Anglers	Swimmers
Outdoor recreational training centres	40.0	50.5	34.8	-	51.0	33.3	3.3	42.5	38.9	58.5
Environmental/ naturalist centres	35.6	45.2	30.9	-	36.5	35.1	30.2	37.5	38.9	39.0
Interpretive/ naturalist tours	28.7	43.0	21.6	-	34.6	25.2	28.6	30.0	26.9	36.6
Campsites accessible by vehicle only	24.0	29.0	21.6	-	34.6	17.5	17.5	15.0	24.1	36.6
Campsites accessible by water only	45.8	41.9	47.5	100.0	38.5	50.3	39.7	77.5	43.5	31.7
Campsites accessibly by trail only	29.8	32.3	28.7	-	26.0	32.2	25.4	40.0	28.7	26.8
Multi-purpose campsites accessible by vehicle, water and/or trail	44.7	49.5	42.0	100.0	54.8	38.6	42.9	30.0	47.2	56.1
Family vacation camps	41.8	45.2	40.3	-	43.3	40.9	42.9	20.0	45.4	53.7
Outfitter/commercial lodges	21.1	30.1	16.6	-	22.1	20.5	19.1	15.0	20.4	31.7
Commercial service supply centres	24.7	33.3	20.4	-	26.0	24.0	27.0	10.0	22.2	34.2
Shuttle service and parking for canoeists	31.6	37.6	28.7	-	29.8	32.8	36.5	62.5	13.0	17.1
No developments	11.3	9.7	12.2	-	10.2	11.9	11.1	7.5	1.9	12.2
Other	1.09	2.2	0.6	-	7.7	13.5	1.6	-	-	-

Support was greatest by those visitor parties interviewed for campsites accessible by water only (45.8%), multipurpose campsites (44.7%), family vacation camps (41.8%), outdoor recreational training centres (40.0%), environmental naturalist centres (35.6%), and shuttle service and parking for canoeists (31.6%). Only 11.3% of all parties felt no development was desirable.

Support was analysed by citizenship, user type and primary recreational activity groups as well and there were distinct differences in levels of support within each.

CHAPTER 7: ST. CROIX WATERWAY RECREATIONAL USER SEGMENT PROFILES

7.0 ST. CROIX WATERWAY RECREATIONAL USER PROFILES

7.1 USER PROFILES

This chapter profiles current recreational user segments based on the information in the preceding chapters. These user profiles are essential to estimating current and anticipated demand for outdoor recreational opportunities and for identifying current potential market segments.

7.1.1 Permanent Resident Users

Primary months of use: Summer

Party Characteristics (Summer):

Average party size: 3.7 persons

Average number of visits: 26.7

Average length of stay: 1 day

Average number of recreation days consumed: 26.7 days

Transportation to Waterway: Car/truck

Party Head Characteristics:

Occupation: Retired (41.7%)

Family Income: Under $29,999

Accommodations Used: Permanent residence

Recreational Activity Patterns:

Primary trip purpose: Angling (33.3%)

Recreational activity preferences: boating, sightseeing/relaxing/pleasure, berrypicking

Recreational activity area: Chiputneticook Lakes

Average expenditure per party: $11.96 (Canadian Currency)

$39.66 (U.S. Currency)

7.1.2 Seasonal Resident Users

Primary months of use: Summer and fall

Party Characteristics (Summer):

Average party size: 4.6 persons

Average number of visits: 4.8

Average length of stay: 5.1 days

Average number of recreation days consumed: 24.5 days

Transportation to Waterway: Car

Party Head Characteristics:

Permanent residence: Carleton County, N.B. (25.0%)
Aroostook County, Maine (24.1%)

Occupation: White Collar (49.7%)

Family Income: $20,000 +

Accommodations Used: Camp/cottage

Recreational Activity Patterns:

Primary trip purpose: sightseeing/relaxing/pleasure (31.2%)

Recreational activity preferences: angling, boating, canoeing

Recreational activity area: Chiputneticook Lakes

Average expenditure per party: $73.14 (Canadian Currency)
$288.88 (U.S. Currency)

7.1.3 Permanent and Seasonal Resident Users

Primary months of use: Summer, fall and spring

Party Characteristics (Summer):

Average party size: 6.2 persons

Average number of visits: 33.3

Average length of stay: 1 to 13 days

Average number of recreation days consumed: 126 days

Transportation to Waterway: Car/truck

Party Head Characteristics:

Occupation: Retired (50.0%)

Family Income: Under $29,999

Accommodations Used: Permanent residence and seasonal camp/cottage

Recreational Activity Patterns:

Primary trip purpose: sightseeing/relaxing/pleasure (50.0%)

Recreational activity preferences: angling, canoeing, boating, camping

Recreational activity area: Chiputneticook Lakes

Average expenditure per party: see Permanent Resident Users and Seasonal Resident Users

7.1.4 Recreational Visitors

CANADIAN VISITORS

Primary month of visitation: July (45.2%)

Primary weekday of visitation: Weekend (58.9%)

Party Characteristics:

Average party size: 5.4 persons
Party Composition: Families (48.4%)
Sex of party members: Male (57.0%) & Female (43.0%)
Age of party members: Mixed
Frequency of visit: repeat visitors every year (66.7%)

Party Head Characteristics:

Occupation: Whitecollar (41.4%)
Family Income: $30,000+ (54.9%)

Trip Planning:

Information source: not applicable because repeat users
Average number of days planned for trip: 1 day
Average length of stay: 1.6 days
Transportation to Waterway: car (52.7%)

Accommodations used: Camping at designated campsites (14.0%)

Primary Trip Purpose: Sightseeing/relaxing/pleasure (26.9%), swimming (26.9%)

Recreational Activity Preferences: Swimming (51.6%), Sightseeing/relaxing/pleasure (46.2%), Angling (34.4%), Canoeing (20.4%), Picnicking (20.4%)

Travel Patterns:

Primary travel zones: Lower Spednic Lake, St. Croix River from St. Croix/Vanceboro to Grand Falls
Entry points commonly used: North Lake Provincial Park, St. Croix/Vanceboro, Grand Falls Dam, Beaconsfield Rd.

Exit points commonly used: North Lake Provincial Park, St. Croix/Vanceboro, Grand Falls Dam

Average expenditure per party: $71.98

AMERICAN VISITORS

Primary month of visitation: July (45.9%)

Primary weekday of visitation: Weekdays (48.1%) and weekends (51.9%)

Party Characteristics:

Average party size: 4.5 persons

Party composition: Adults only (48.6%)

Sex of party members: Male (70.8%)

Age of party members: 25-49 years (51.1%)

Frequency of visit: Repeat visitors but not every year (44.2%)

Party Head Characteristics:

Occupation: Whitecollar (55.9%)

Family income: $40,000+ (40.9%)

Trip Planning:

Information source: Friends and relatives (13.3%), The Maine Atlas (11.6%)

Average number of days planned for trip: 1-4 days

Average length of stay: 3.4 days

Transportation to Waterway: Car (45.9%), truck/van (47.5%)

Accommodations used: Camping at designated campsites (19.3%), private camp/cottage/residence (19.3%), commercial lodge (13.3%)

Primary Trip Purpose: Angling (51.9%)

Recreational Activity Preferences: Angling (77.4%), Sightseeing/relaxing/pleasure (54.1%), Swimming (28.7%), Canoeing (27.6%)

Travel Patterns:

Primary travel zones: East Grand Lake, St. Croix River from St. Croix/Vanceboro to Grand Falls

Entry points commonly used: St. Croix/Vanceboro

Exit points commonly used: Loon Bay, Grand Falls Dam

Average expenditures per party: $550.35

LOCAL VISITORS

Primary month of visitation: July (47.1%)

Primary weekday of visitation: Weekends (63.5%)

Party Characteristics:

- Average party size: 4.2 persons
- Party composition: Families (47.1%)
- Sex of party members: Males (58.9%) & Females (41.1%)
- Age of party members: Mixed
- Frequency of visit: Repeat visitors every year (89.4%)

Party Head Characteristics:

- Occupation: Whitecollar (44.1%)
- Family Income: $9-19,999 (14.4% Canadians), $10-29,999 (26.0% Americans)

Trip Planning:

- Information source: not applicable because repeat users
- Average number of days planned for trip: 1 day
- Average length of stay: 1.2 days
- Transportation to Waterway: Car (46.2%), truck/van (45.2%)

Accommodations used: rarely used

Primary trip purpose: Angling (35.6%), Swimming (33.7%)

Recreational Activity Preferences: Angling (49.0%), Swimming (42.3%), Sightseeing/relaxing/pleasure (26.0%)

Travel Patterns:

- Primary travel zones: East Grand Lake, Spednic Lake, St. Croix River from St. Croix/Vanceboro to Loon Bay but particulary to Grand Falls
- Entry points commonly used: St. Croix/Vanceboro, Grand Falls Dam, Milltown, Princeton Bridge

Exit points commonly used: St. Croix/Vanceboro, Grand Falls Dam, Milltown, Princeton Bridge

Average expenditure per party: $32.35

NON-LOCAL VISITORS

Primary month of visitation: July (45.0%)

Primary weekday of visitation: Weekends (56.1%)

Party Characteristics:

Average party size: 5.2 persons

Party Composition: Adults only (47.4%)

Sex of party members: Males (68.1%)

Age of party members: 25-49 year of age (50.3%)

Frequency of visit: Repeat visitors but not every year (56.1%)

Party Head Characteristics:

Occupation: Whitecollar (57.5%)

Number of weeks vacation:

Family Income: $30,000+ (16.3% Canadians)
30,000+ (40.3% Americans)

Trip Planning:

Information source: Friends and relatives (15.2%), Th Maine Atlas (12.3%)

Average number of days planned for trip: 1-4 days

Average length of stay: 3.7 days

Transportation to Waterway: Car (49.1%), truck/va (44.4%)

Accommodations Used: Camped at designated campsite (24.6%), private camp/cottage/residence (21.1%) commercial lodge (14.0%)

Primary Trip Purpose: Angling (41.5%)

Recreational Activity Preferences: Angling (70.8%) Sightseeing/relaxing/pleasure (67.3%), Canoein (35.7%), Swimming (33.3%), Camping (29.8%)

Travel Patterns:

Primary travel zones: North Lake, Grand Lake, Spednic Lake, St. Croix River from St. Croix/Vanceboro to Grand Falls

Entry points commonly used: St. Croix/Vanceboro

Exit points commonly used: Loon Bay, Grand Falls Dam

Average expenditure per party: $582.88

Latent Potential & Future Demand for Recreational Opportunities Available on the St. Croix Waterway

CHAPTER 8: BASES FOR ESTIMATING LATENT, POTENTIAL AND FUTURE DEMAND

8.0 BASES FOR ESTIMATING LATENT POTENTIAL AND FUTURE DEMAND

8.1 INTRODUCTION

Knowledge of current visitor demand for the St. Croix Waterway and estimates of potential and future demand are essential to reaching wise management decisions which will result in the protection and enhancement of the study area's natural and aesthetic values and its outstanding outdoor recreational opportunities.

It is probably safe to assume that Waterway resident demand, (both permanent and seasonal) for recreational opportunities along the St. Croix Waterway is relatively fixed and major variations in this demand are largely a function of increases or decreases in the resident population. By comparison, visitor demand, particularly by non-local visitors, is much more variable and can readily change depending upon a number of factors: simple word-of-mouth, advertising and promotion and management control techniques to cite but a few.

Unfortunately, it was not possible to accurately estimate the current amount of use by recreational visitors to the study area during the study period, and therefore, it was not possible to estimate future demand as a simple trend extension of past use. By estimating the current potential demand for outdoor recreational activities by specific prospective target markets, however, it was possible to roughly calculate the potential activity-specific demand which could be tapped, or controlled, if necessary, by good management of the Waterway.

The objective of this section of the report was, therefore, to estimate the current and future potential demand for specific activities by selected market segments, particularly New Brunswick and Maine residents, but also by visitors from Nova Scotia, Prince Edward Island and the north-eastern New England States.

8.2 LATENT, POTENTIAL AND FUTURE DEMAND

Latent demand for a recreational opportunity refers to that portion of the market which would normally participate but do not because of some barrier within the market place. Barriers can include lack of awareness (frustrated demand) or loss of the share of the market due to factors such as changing prices (diverted demand) and competition (substituted demand). It is possible, however, to modify the market conditions (i.e., barriers) and, hence, capture a share of this latent market. Promoting a product, for example, can result in making interested consumers aware. Latent demand excludes consumers who are not interested or cannot afford the product.

Potential demand is quite simply current demand plus latent demand. Since it was not possible to estimate the current demand by visitors for recreational opportunities available along the St. Croix Waterway, this study chose to estimate the current demand for specific outdoor recreational opportunities (e.g., canoeing, hiking, etc.) by residents of and tourists to Maine and New Brunswick. In effect this demand represents the potential demand for the Waterway's recreational opportunities which may or may not be tapped. Although latent and current demand cannot be differentiated, presumably some of this potential demand is already being met on the Waterway.

Future recreational demand is, very simply, the demand for specific activity opportunities in the future. There are a number of factors which influence an individual's propensity and ability to travel and/or participate in outdoor recreation. The sum of these factors has a tremendous impact on the future demand for outdoor recreational resources. Generally accepted socio-economic trends which may influence both Canadian and American demand for outdoor recreational opportunities include population growth, age and sex distribution, urbanization, changing family patterns, income levels, employment levels and increased energy costs to cite but a few.

Estimating future demand is risky given that there is no guarantee the future will evolve exactly as predicted nor that there will not be the sudden advent of totally unexpected changes in either societal or individual lifestyles which will be reflected in changing demands for outdoor recreation. Forecasting future demand is essential for a number of reasons, however:

1. To ensure that facilities/programs/opportunities developed and offered are, in fact, in keeping with actual public demand not perceived demand.

2. Area and facility requirements must be estimated in order to assure preservation, development and enhancement of suitable quality resources.

3. Other recreational requirements such as level of management operations, trained personnel and budgetary requisitions must be preplanned.

4. That point in time when supply adequately meets demand should be determined, for to go beyond would be economically inefficient.

8.2.1 Bases for Estimating Potential and Future Demand

In estimating potential and future demand for specific recreational opportunities available along the St. Croix Waterway, this study reviewed a number of secondary data sources including A Demand Analysis for New Brunswick's Outdoor Recreational Opportunities by Residents and Visitors (Anonymous, 1986), the American 1980 National Survey of Fishing, Hunting and Wildlife Associated Recreation (Anonymous, 1980) and the Analysis and Summary of Maine Travel Survey Data (Anonymous, 1986). Estimates of the potential demand for wilderness vacation packages on the St. Croix Waterway were based on a telephone survey of a sample of travel agents throughout the Maritime provinces and the north-eastern United States.

8.2.2 Bases for New Brunswick Demand Estimates

A Demand Analysis for New Brunswick's Outdoor Recreational Opportunities by Residents and Visitors was the primary source for demand estimates by residents and visitors. This study was based on secondary research and analyzed numerous New Brunswick and Canadian tourism and recreational studies, surveys and data sources supplemented by knowledgeable individuals within the Province who were actively involved in the participation, provision for and/or administration of a specific recreational activity (e.g., Canadian Wildlife Service staff, hotel/inn operators, provincial sport/recreational activity presidents, etc.).

While there are numerous tourism-based studies/surveys of non-resident visitors to the Province, none have focused on outdoor recreation as an attraction for tourists, despite the fact that such opportunities can provide a powerful appeal in the marketing of tourism destination regions. Many outdoor recreation opportunities have, in fact, become the prime destination and visit purpose of local/provincial residents and non-resident visitors (e.g. Banff, Jasper, ski resorts, etc.).

Very little attention has been paid to travel by New Brunswickers within the Province. Tourism New Brunswick has conducted only one minor resident travel survey and that was in 1979-1980. In 1984 however, Statistics Canada conducted a Canadian Travel Survey (CTS) by province for each quarter of the year. Again, there was little focus on outdoor recreational travel patterns. On a Canada-wide basis, the first and only Canadian project to collect fitness and recreational data was the Canada Fitness Survey initiated in 1981 by Fitness Canada. This is the only reliable source of secondary data other than Tourism New Brunswick's Auto Exit Surveys and the CTS that can be used in estimating outdoor recreational demand by New Brunswick residents and tourists.

It has only been within the past decade that the Province has initiated sporadic, generally site-specific data collection on outdoor recreation demand. In 1977, the Department of Natural Resources contracted a recreational demand analysis of the Bathurst Pilot Project and during 1985-86 initiated both a province-wide and a site-specific Crown land recreation demand analysis.

Future demand estimates were further complicated by a number of factors: the lack of significant past data on recreational use by both New Brunswick residents and non-resident visitors, the fact that much of the existing data tends to show public response to recreational opportunities rather than reflecting what the public may actually desire and the impossibility of accounting for hidden demands that do not surface until after opportunities (e.g., facilities, programs, etc.) have been provided. For these reasons the estimated future recreational activity demands made were based on the estimated current demands, the future travel and outdoor recreational trends cited in the report and the subjective judgement of the author. Future demand estimates were for the period 1986 to 1994 although their reliability decreases considerably after 1990.

8.2.3 Bases for Maine Demand Estimates

In 1980 the Fish and Wildlife Service of the United States Department of the Interior conducted the sixth in a series of five year interval surveys of fishing, hunting and non-consumptive wildlife associated activities such as wildlife observation and photography. This survey and the Maine report (Anonymous, 1980b) provided the primary secondary research source for this study's estimates. In addition, the Maine Department of Conservation's Analysis and Summary of Maine Travel Survey Data (Anonymous, 1986c) provided a valuable source for specific activity demand determinations.

It should be noted that, in light of the previously alluded to problems in estimating demand, this study's estimates are based on a collation of all secondary research sources and represent conservative minimums. Future estimates take into consideration the various factors which impact on outdoor recreation but do not consider the impact of increased advertising or promotion or development or enhancement of opportunities. These latter factors can have a tremendous positive impact on otherwise low participation rates and usage of a resource but are management decisions beyond the scope of this report.

It should also be noted that this report simply presents the current and future activity-specific potential demand estimates gleaned from the secondary research. No attempt has been made to summarize the details on demand determinations relevant to each of the secondary research sources. Demand estimates can be found in Chapter 9.

CHAPTER 9: CURRENT AND FUTURE ACTIVITY-SPECIFIC POTENTIAL DEMAND ESTIMATES

9.0 CURRENT AND FUTURE ACTIVITY - SPECIFIC POTENTIAL DEMAND ESTIMATES

The current and future potential demand estimates that follow were gleaned from a variety of sources. Demand determination varied from source to source and, hence, were not comparable. To simplify the presentation, estimates are based on demand by Maine residents and tourists to the State and on demand by New Brunswick residents and tourists to the Province.

9.1 OUTDOOR RECREATION DEMAND BY NEW BRUNSWICK RESIDENTS AND TOURISTS

Estimates of potential outdoor recreational demand by New Brunswickers and tourists visiting the Province were based on demand determinations from A Demand Analysis for New Brunswickers Outdoor Recreational Opportunities by Residents and Visitors (Anonymous, 1986b). Calculations were based on:

1. A recreation activity day (e.g., canoeing day, hiking day, swimming day, etc.) which was defined as occurring each time an individual participated in a recreational activity during one day.

2. Non-resident tourist visitors only, not excursionist visitors.

3. The most recent available data which was considered current (1986) and projections were based on this data. For example, some of the secondary source demand estimates were based on data compiled in 1981 (e.g. Canada Fitness Survey) which was considered current in the absence of more recent data.

It should be noted that data was not available for estimating the demand for all those activities available on the St. Croix Waterway. Table 9.1 summarizes the demand estimates for only those activities for which there is demand data. As has already been stated, New Brunswick is sadly lacking in recreational activity participation and demand data. No data is available for the following activities, all of which the St. Croix Waterway provides opportunities for and, therefore, potential demand estimates are not possible: canoeing, kayaking, boating (including sailboating and sailboarding), lake swimming, ATV's and waterskiing. Participation data and demand

TABLE 9.1: New Brunswick demand estimates for specific outdoor recreational activities by residents and non-resident tourists.

Outdoor Recreational Activity	DEMAND			ESTIMATES		
	Number of Participants			Number of Activity Days		
	R	NR	T	R	NR	T
CURRENT (1986)						
Hiking	NA	21,506	21,506	NA	21,506	21,506
Nature Observation	130,900	NA	130,900	1,900,000	NA	1,900,000
Birding	2,000	4,000	6,000	20,000	20,000	40,000
Angling	171,458	8,570	180,028	1,500,000	53,000	1,553,000
LATENT (1986)						
Hiking	NA	416,300	416,300	NA	395,000	395,000
Nature Observation	NE	NE	NE	NE	NE	NE
Birding	2,000	NE	NE	20,000	NE	NE
Angling	NC	554,163	725,621	NE	NE	NE
FUTURE (1994)						
Hiking	NE	NC	NE	NE	NC	NE
Nature Observation	135,000	NA	135,000	2,050,000	NA	2,050,000
Birding	NE	NE	NE	NE	NE	NE
Angling	210,000	3,489	213,489	1,765,000	43,994	1,808,994

R = New Brunswick Residents
NR = Non-Resident Tourists to New Brunswick
T = Total Demand
NA = Not Available
NE = Not Estimatable
NC = No Change

estimates are limited for most other recreational activities which are presented below.

9.1.1 Sightseeing/Relaxing/Pleasure

Estimating the demand for sightseeing/relaxing/pleasure is difficult for a number of reasons, but primarily because it can mean so many different things and can incorporate activities that fall into other activity categories (e.g. picnicking, visiting friends and relatives, participating in arts and cultural activities such as visiting museums, etc.). It is impossible to estimate the proportion of the travelling public who would be interested in consuming their sightseeing/relaxing/pleasure days along the St. Croix Waterway.

For interest, however, this study did a cursory examination of tourism statistics for both visitors to New Brunswick and residents. This does provide very rough estimates of potential demand which may or may not be tapped by the Waterway and which may or may not be fulfilled by sightseeing/relaxing/pleasure opportunities in the study area.

Slightly more than 4 million people have visited New Brunswick each year since 1971. Of these visitors, approximately 90% visit the Province by automobile. In 1983, 50.1% of these visitors were tourists and approximately 60% of the total number of non-resident automobile visitors were Canadians while 38.4% were American. Less than 1% of all visitors were foreign visitors. The majority of Canadian visitors were from Nova Scotia and Prince Edward Island (Regional market segment) (36.8%), Quebec (33.7%) and Ontario (24.8%). The majority of American visitors were from the New England States (60.9%). Sightseeing was the primary visit purpose of all market segments, particularly Ontario, Quebec and New England.

Based on market segment travel patterns, accommodation usage, average length of stay, etc., there is tremendous potential for attracting portions of specific market segments to the St. Croix Waterway, particularly Ontario and the New England States for sightseeing/relaxing/pleasure. A very rough estimate of the potential demand by these market segments for sightseeing/relaxing/pleasure opportunities is 41,600 visitor parties from Ontario seeking 162,000 activity days primarily in July and 19,000 visitor parties from the New England States seeking 70,000 activity days primarily in July and September. Clearly, not all this demand is interested in sightseeing/relaxing/ pleasure opportunities available on the St. Croix, but there is potential to tap some of this market. Given the travel patterns of these two market segments, New England visitors would be easier to access since the majority exit and enter the Province at Edmunston and St. Stephen. Ontario visitors typically travel the Trans-Canada Highway entering and exiting at St. Jacques and Aulac but could be encouraged to exit this route at Canterbury for a side-trip to the Waterway. Suitable programs (e.g., interpretive programs) and service facilities would be essential to drawing and retaining these visitors.

In 1984, New Brunswickers made a total of 1.6 million person trips (i.e., a trip taken by one person either singly or in a group: for example, if four persons go on a trip, it counts as a four-person trip) within the Province: 45.8% of these trips were day trips and 54.2% were overnight trips. Only 28.4% of all trips were for pleasure purposes, primarily during the summer and autumn months. In keeping with the geographical distribution of New Brunswick's population, 59.6% of all trips were made by people living in the Fundy and St. John River regions. The favoured destination area of all resident travellers was overwhelmingly the St. John River Region. Over half (54.9%) of all trips by residents had a one-way distance of less than 99 km and another 33.3% of all trips had a one-way distance of 100-199 km.

The St. Croix Waterway is readily accessible, therefore, to a large proportion of travelling New Brunswickers. Based on resident travel patterns, it is possible to determine the target resident population (MAP) and estimate that the latent demand for sightseeing/relaxing/pleasure opportunities by this target population is roughly 150,000 annual person trips seeking 470,000 activity days. Not all these residents would necessarily be interested in the opportunities offered by the St. Croix Waterway but certainly some would.

9.1.2 Day Hiking and Backpacking

No demand data is available for day hiking or backpack hiking by residents or tourists.

Hiking (day and backpacking) is a popular recreational activity (ranking third) of many non-resident visitors from all market segments especially Western Canada and foreign visitors. Very few visitors actually hike while in New Brunswick, however. In 1984, 416,300 tourists (37.3%) reported participation in hiking but only 21,506 tourists (1.7%) hiked while in the Province (Table 9.1). Unfortunately, there is no way to determine those who participate in day hiking and those who participate in backpack/hiking.

Assuming a minimum participation of one hiking day (frequency rates are not available), minimum current demand by tourists is estimated at 21,506 hiking days: 2,779 hiking days by Regional tourists (Nova Scotia and Prince Edward Island), 4,963 days by Quebec tourists, 5,630 by Ontario tourists, 1,057 days by Western Canada tourists, 4,110 days by New Englanders, 914 days by Mid-Atlantic visitors, 1,823 days by other U.S. visitors and 230 days by foreign visitors.

Clearly, there is a latent demand for hiking opportunities by visitors but, for whatever reasons, it is not being expressed or met at the present time. Latent demand is estimated at 295,000 hiking days: 74,000 by Regional toursits, 108,000 by Quebec tourists, 72,000 by Ontario tourists, 250,000 days by Western Canadians, 34,000 days by New Englanders, 29,000 days by other U.S. tourists and 4,870 days bv foreign tourists. The greatest potential for promoting and advertising hiking opportunities is with foreign visitors (62.1% report active hiking participation) and visitors from Western Canada (48.4%), Mid-Atlantic (39.8%) and other U.S. states (37.7%).

It is unlikely that there will be a substantial increase in hiking demand by non-resident visitors in the future given the stabilization in the number of tourists to New Brunswick. Promotion/advertising of New Brunswick's, and specifically the St. Croix Waterway's, hiking opportunities could result in demand increases.

Data is not available to develop a specific profile of non-resident visitor hikers. Generally, however, day hikers are and will continue to be families with married or single parents, from all age groups, and lower to upper middle income earners. More and more previously dedicated backpackers who are now married with young children will be seen on the day-use hiking trails as well. These backpackers of the 70's and early 80's will choose, rather than not hike at all, to continue to hike in the future with their families. Consequently, their hiking demands will change: shorter hikes, maximum facilities, etc.

9.1.3 Nature Study/Observation

No data is available for resident or non-resident demand. Based on the Statistics Canada survey, The Importance of Wildlife to Canadians (Anonymous, 1981), however, it is possible to estimate that the minimum current demand for nature observation trips is 1.9 million recreation days by 130,900 New Brunswickers (Table 9.1).

Of non-resident tourists, it is estimated that 260,000 make wildlife-related trips every year. This figure only indicates the degree of non-resident interest in nature observation, however, because no tourists cited any form of nature observation as their primary trip purpose. Nature observation is, and will continue to be, a bonus to a visitor's trip and not a primary purpose. The planning for and provision of nature observation opportunities can have tremendous positive implications for outdoor recreational activity participation and tourism and should be considered in their planning and development.

By 1994, it is estimated that the number of primary nature observation trip days by residents will increase to 2.05 million recreation days by 584,000 residents.

Serious nature observation participants who make specific trips for this purpose will continue to be urban, 25-34 years of age, male or female with more than secondary schooling. There will, however, be an increase in the proportion of 50+ age group and families as serious nature observers.

9.1.4 Birding

Despite superb provincial birding resources, the current demand for birding opportunities is not high.

Although no birding demand data is available, based on The Importance of Wildlife to Canadians (Anonymous, 1981), it is estimated that the 2,000 serious resident birders spend approximately 20,000 recreation days specifically for the purpose of birding (Table 9.1).

Approximately 4,000 tourists visit the Province each year and spend an estimated 20,000 recreation birding days. Of these tourists, an estimated 4% are on special birding package tours. Approximately 25% of those on tours are from the United States, 65% are from Ontario and 10% are New Brunswickers.

Given the inadequacy of current demand data and the problems associated with defining birders, it is impossible to estimate future demand. According to the Audobon Society, however, birdwatching is the fastest growing activity in North America.

Birding in New Brunswick, as an element of the travel/tourist industry, is very under-represented and under-promoted especially in light of the superb birding opportunities available. There is little doubt that the tremendous potential for future demand will hinge on the degree of development and promotion. With no development and promotion, there will be little change in the existing demand.

Although birding opportunities and demand are, at present, largely concentrated on Grand Manan and Machias-Seal Island and at Mary's Point and the Tantramar Marshes the presence of the endangered bald eagle and osprey along the St. Croix Waterway would offer tremendous appeal to serious birders. Potential demand for birding opportunities on the Waterway could be tremendous.

9.1.5 Picnicking

There is no data available to realistically estimate the province-wide demand for picnicking by residents or tourists. Picnicking is participated in by tourists, excursionists and residents primarily on a summer day-use basis. The demands and use patterns of the three groups are somewhat different, however.

Excursionists are generally seeking a pleasant roadside picnic site for a brief respite from travelling. Picnicking is not their primary trip purpose but rather a quick, easy, inexpensive, fresh air meal stop. Excursionist picnicking needs are few: a site which is, most importantly, roadside and is clean and attractive with minimal facilities (washroom, running water). Few excursionists travel the St. Croix Waterway roads and, therefore, demand is and will continue to be negligible.

Tourists, too, are seeking roadside picnic sites for the same reasons as excursionists but their more leisurely trip allows them to frequently leave the road in search of a close-by park offering picnic sites. Although close, clean and attractive sites are most important to the tourist, additional facilities are appreciated (e.g., children's playground, barbeques, scenic view, swimming area, etc.). As with excursionists, few automobile tourists travel the St. Croix Waterway roads and, therefore, demand is and will continue to be negligible.

Residents are most likely to make trips primarily for the purpose of picnicking or an activity trip (e.g., swimming, hiking, sightseeing) in conjunction with a picnic. Resident picnickers generally go to established municipal, provincial and federal parks where they can be guaranteed of attractive, clean picnic facilities with a variety of activities available (e.g., children's playground, swimming, short nature walks, etc.). While most resident picnickers are family or small groups, there appears to be a growing demand for large group picnics (e.g., family reunions, company picnics, etc.) which require larger sites and more equipment and facilities.

It is unlikely that there will be a substantial change in the current demand for picnicking over the next few years although it is expected that the picnicker will change. Family picnickers will still predominate during the summer months but there will be an increase in both the proportion of older picnickers and large group picnics. There will be a very small increase in the number of picnickers during the late spring and early fall shoulder seasons, primarily older couples, but the weather will annually dictate demand.

Demand for picnicking along the St. Croix Waterway will continue to be by local area residents living along both sides of the lakes and river. Much of this demand will be for picnicking in conjunction with swimming and shore angling by family groups.

9.1.6 Camping

Camping has been an enjoyable accommodation/recreational experience for residents and tourists travelling through New Brunswick for many years. Camping can be categorized as primitive (back-country) camping, semi-serviced camping, serviced camping, group camping, and winter camping (primitive and group). This study considered all forms of camping except serviced camping which is not likely to ever be publicly developed along the St. Croix Waterway given the semi-wilderness setting. Commercial developers may, of course, develop such serviced facilities.

Primitive Camping: is more a form of recreation than accommodation in which living in the out-of-doors is for the purpose of a close relationship with the natural environment and to participate in leisure activities which may be physical (e.g., hiking, fishing, etc.) or non-physical (e.g., nature observation, simply enjoying the solitude, etc.). Primitive camping by its very definition is participated in the back-country where isolation, privacy, solitude, and peacefulness are assured. Minimal facilities are available.

There is no data available upon which to base realistic estimates of the current and future province-wide potential demand for primitive camping opportunities. Similarly, there is no data available for activities which are done in conjunction with primitive camping such as hiking. While there certainly are residents and tourists who are interested and participate in the more wilderness-based primitive camping and associated activities, it is suggested that this submarket of the outdoors travel market is and will continue to be minimal. The results of the Longwoods Research Group Inc. study into the Canadian potential for the American pleasure travel market clearly pointed out that the mainstream American outdoors market is looking for the less wild and rugged outdoors camping experience with many of the at-home amenities. The Canadian outdoors market is no different.

Semi-Serviced Camping: provides more facilities (e.g., sanitary facilities, water supply) than primitive campsites but not the at-home amenities found at fully serviced drive-in sites. Because semi-serviced sites are located in the front country within easy walking/boating distance (3-4 km) of main roads, facility personnel can provide minimal servicing and monitoring.

Semi-serviced campsite use is largely dependent upon visitor interest and willingness to hike or boat/canoe to the site. Although no province-wide hiking/canoeing data is available, it is suggested that the demand for semi-serviced camping by New Brunswickers is very good where angling and hunting opportunities exist.

In 1977, the Provincial Department of Forest, Mines and Energy tested and evaluated various modes of wilderness recreation, including semi-serviced camping which had been provided in the Bathurst Pilot since 1974. Although all departmentally designated semi-serviced campsites were drive-in, access involved an average one-way one-hour drive along forest roads.

While recreational use of the Bathurst Pilot Project was overwhelmingly local (87% of all visitors) day use (86.3% of all visitors), an estimated 4,059 visitors (13.7%) spent one or more nights on Crown land during the summer months. Nearly half (48.6%) of these overnight visitors spent the night at Departmental semi-serviced camping facilities. Another 39.8% of overnight visitors stayed in an owned or borrowed camp. Only 11.6% of overnight visitors stayed elsewhere (e.g., camped along a river, lake or road). During the autumn months, recreational use of the Pilot Project continued to be primarily day-use (73.9%) but for hunting purposes. Of overnight visitors, however, 91.7% used Departmental semi-serviced camping sites. Clearly, Departmental semi-serviced campsites provided a needed facility and, in fact, a technique for controlling recreational use.

The current potential demand for semi-serviced camping by tourists is negligible. Not only do the majority of non-resident tourists visit New Brunswick to sightsee or visit friends or relatives but canoeing, angling and hiking activities, generally associated with semi-serviced camping, have very low participation rates. It is unlikely that there will be any change in the future.

Future demand for semi-serviced camping will be voiced almost entirely by residents in order to facilitate angling, hunting and boating, particularly canoeing, participation. The St. Croix Waterway offers excellent boating/canoeing, angling and hunting opportunities. As the demand for each of these activities increases, so too will the demand for semi-serviced camping sites that are readily accessible from both the water's edge for canoeists and anglers and from the network of forest roads that follow the shoreline for hunters and shoreline anglers.

Group Camping: There is no data upon which to base realistic estimates of current and future demand for group camping by residents. Demand by non-resident visitors is presumed to be negligible.

There are a number of provincial groups who participate in group camping and might be interested in group camping sites: Scouts, Rovers, Guides, naturalist clubs, etc. Some of these groups have their own facilities: Scouts, for instance, have several Scout camps in the Province as do Girl Guides and the Provincial 4-H Clubs.

Demand for group camping by these large organizations is tremendous and some overflow demand could certainly be met by public group camping sites with suitable facilities. Scouts, for example, number 8,000 boys and 2,000 leaders across the Province. All levels of Scouts are involved in some form of camping. Province-wide demand estimates for Scout camping are not available. Demand by Fredericton District Scouts provides some indication, however, of demand. Between September 1984 and August 1985, the Fredericton District Scouts held 99 camps with an average of 10-25 persons per camp for 4,084 boy days, 1,224 leader days for a total of 5,372 camping days. While the Fredericton District Scout camp at Yoho Lake can meet some of this Fredericton demand, approximately 15-20% of all camps must be held at other locations. Demand, in fact, is likely higher than indicated because when Scout camp facilities or other facilities cannot be reserved, camps must be cancelled.

Most smaller organizations do not own a suitable camp (e.g., naturalist clubs, universities, etc.) and, therefore, are in need of group camping sites and facilities as well.

Relevant provincial organization requiring group camping facilities would need to be polled to accurately determine group camping participation data and demand.

The St. Croix Waterway offers wonderful outdoor recreational opportunities for groups to participate in canoeing, hiking, angling and nature study. There are, however, no camping facilities suited to large groups despite the fact that such groups, particularly canoeing groups, frequently use the Waterway.

Winter Camping: There is no data upon which to base realistic estimates of province-wide demand for either primitive winter camping or group winter camping. Demand by non-resident visitors would be negligible. Presumably most of the resident demand for winter camping would be by organized groups such as Scouts.

9.1.7 Angling

Angling has traditionally been a favourite recreational activity of New Brunswickers. Non-resident visitors, too, have long visited the Province for its well-known salmon angling.

Every five years a national angler survey is jointly conducted by the respective federal and provincial government departments responsible for angling. The most recent angling data is based on the survey conducted in 1980. The survey of 1985 national angling effort and catch is currently underway and results will not be complete until later this year. The current and future demand estimates which follow were based on both the 1980 New Brunswick angler survey results obtained through the 1980 National Angling Survey and provincial angling license sales.

Angling licence sales for the period 1980 to 1985 provide a good indication of the popularity of angling for residents and non-resident visitors. Over the past five years the total number of annual angling licences issued by the

Department has increased annually with peaks of 197,489 in 1982 and 188,320 in 1983.

Resident anglers have accounted for approximately 95% of all licences issued every year and approximately 76-78% of salmon licences. Between 1980 and 1985, annual resident angling licences increased by 10.3%. Licences issued decreased between '82 and '83 and '83 and '84 by 4.8% and 6.8% respectively. The largest increase (13.3%) in licences issued to residents occurred between 1981 and 1982. Only the Resident Salmon Licence differentiates sales by age. Not surprisingly, there has been a gradual increase over the past five years in the percentage of over-65 anglers from a low of 13.3% in 1980 to a high of 16.1% in 1985.

In 1980, angling effort totalled 1,529,010 rod days. Resident anglers accounted for 96.6% of this effort (1,477,298 rod days) compared with only 3.4% by non-residents (51,712 rod days). Major drainages and drainage composites which accounted for the greatest proportion of angling effort were the St. John (43.9% of angling effort: 670,708 rod days), the Miramichi (18.1% or 276,747 rod days) and West Fundy (7.7% or 118,016 rod days). The remaining nine drainages or drainage composites combined accounted for only 30.3% of total angling effort and individually for less than 5.5% of total effort.

Total species catch for all angling licence classes was 7,142,082. Resident anglers were responsible for 97.8% of total catch (6,985,057) while non-residents caught only 2.2% of total catch. Resident catch by species was primarily brook trout (62.4% of all resident catch), smelt (20.2%), yellow perch (3.3%) and smallmouth bass (2.4%). All other species accounted for less than 2% of total resident catch. Non-resident catch by species was primarily brook trout (64.2%), smallmouth bass (10.4%), white perch (9.7%) and bright salmon (7.0%).

Angling will continue to be a very popular recreational activity pursued by New Brunswickers. Based on the 1980 New Brunswick angling survey and the 1980 to 1985 overall increase in licences issued, it is predicted that angling will continue to increase at a minimum rate of 2% per annum. By 1994, it is estimated that the number of resident anglers will have increased to 210,000 who will fish for 1,765,000 rod days (assuming no change in frequency of participation). Assuming continued decreases in non-resident anglers by approximately 2% per annum, there will be 3,489 anglers by 1994 spending 43,994 rod days (assuming no change in frequency of participation).

Clearly, however, there is a tremendous potential demand for angling by non-resident visitors. In 1983, 41.3% of all non-resident visitors reported that they participate in angling at home. Yet only 2.5% of all visitors actually participated while travelling through the Province in 1983. Greatest potential demand is by visitors from the Regional, Mid-Atlantic States, Western Canada, Quebec and New England market segments.

Presumably, there are a number of obstacles to angling participation by non-resident visitors (e.g., lack of time, information, equipment, advertising or promotion, etc.). Unfortunately, these obstacles to participation are not known. As with other activities which have a high potential demand but low current expressed demand (e.g., hiking), more information/data is required to plan for and provide the recreational opportunities so clearly desired by non-resident visitors.

9.1.8 Hunting

The only current hunting demand data available for New Brunswick is from a survey of deer hunters conducted in 1980. Although another similar survey was conducted in 1986, data is presently not available. Annual hunting license sales do not provide a reliable basis for estimating hunting demand because frequency of participation and location of participation data is not available.

The 1980 deer hunting survey provided hunting days consumed data by county. Assuming the hunting days consumed are evenly distributed across all parishes within the county, it was estimated that the current demand for deer hunting alone is 18,857 hunting days in those parishes bordering the Waterway. Of these days, 2,410 days are estimated to be consumed in St. Stephen Parish, 7,440 days in St. James Parish, 3,995 days in North Lake Parish and 5,012 days in McAdam Parish. Based on the 1980 average deer hunter consumption of 6.7 hunting days per year, it is estimated that 2,814 hunters consume these 18,857 hunting days.

These demand estimates are minimum hunting estimates based on deer hunting only. Moose, black bear and small game, particularly grouse and woodcock are abundant and popular with hunters throughout the St. Croix Basin but no demand data is available. It is very likely that true hunting demand is double or more that of deer hunting.

9.2 OUTDOOR RECREATION DEMAND BY MAINE RESIDENTS AND TOURISTS

Maine's Department of Conservation's Analysis and Summary of Maine Travel Survey Data (Anonymous, 1986c) provided excellent activity demand estimates for both State residents and tourists visiting Maine. This 1984 data provides valuable activity estimates by Tourism Region for 1985, 1988 and 1993. Two of these Tourism Regions, Sunrise and Aroostook, touch on the St. Croix Waterway. The resident and non-resident demand estimates for these two Tourism Regions represent the primary potential demand which may or may not be tapped by the study area.

Table 9.2 summarizes the outdoor recreational demand estimates for the Sunrise and Aroostook Tourism Regions as well as for all the other Maine Tourism Regions and the total demand for all Maine for 1985 (current demand) and projected for 1993 (future demand). Demand was calculated on the basis of:

1. Total peak season activity days (e.g. hiking days, swimming days, canoeing days, etc.) where peak season was defined as that time of the year when participation in a particular activity is at its maximum (e.g., summer and fall for family camping).

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Outdoor Recreation Activity	Maine Residents				Non-Resident Visitors				Total Demand			
	Sunrise Tourism Region	Aroostook Tourism Region	Other Maine	Total Maine	Sunrise Tourism Region	Aroostook Tourism Region	Other Maine	Total Maine	Sunrise Tourism Region	Aroostook Tourism Region	Other Maine	Total Maine
Lake Swimming												
1 - 1985	8.5	15.8	501.6	526.0	15.4	62.1	900.2	977.8	24.0	78.0	1402.4	1503.8
1993	12.1	22.4	710.5	745.1	21.0	84.5	1224.3	1329.8	33.1	106.9	1934.8	2074.9
2 - 1985	0.3	0.7	20.9	21.9	0.5	2.1	30.6	33.2	0.8	2.7	51.5	55.2
1993	0.5	0.9	29.6	31.0	0.7	2.9	41.6	45.2	1.2	3.8	51.2	56.3
Family Camping												
1 - 1985	7.3	81.2	1139.6	1228.0	1.2	7.9	1675.1	1684.2	8.5	89.0	2814.7	2912.2
1993	10.3	114.9	1613.6	1738.9	1.6	10.7	2281.4	2293.8	11.9	125.7	3894.9	4032.6
2 - 1985	0.1	1.1	15.9	17.2	0.0	0.1	46.6	46.7	0.1	1.2	62.5	63.9
1993	0.1	1.6	16.0	17.8	0.0	0.2	69.3	69.5	0.2	1.7	85.4	87.3
Primitive Camping												
1 - 1985	13.1	145.8	324.5	483.4	31.4	3.4	472.5	507.3	44.5	149.1	797.0	990.6
1993	18.5	206.4	459.4	684.4	42.7	4.6	642.6	689.9	61.2	211.0	1102.0	1374.2
2 - 1985	0.2	2.5	5.6	8.3	0.4	0.0	6.6	7.1	0.7	2.6	12.2	15.4
1993	0.3	3.6	8.0	11.8	0.6	0.1	9.0	9.2	0.9	3.6	16.9	21.5
Pleasure Boating												
1 - 1985	5.8	76.0	260.1	342.0	1.1	7.2	402.1	410.4	6.9	83.2	662.3	752.4
1993	8.2	107.6	369.7	485.6	1.5	9.8	546.9	558.2	9.8	117.4	916.6	1043.8
2 - 1985	0.1	1.6	5.5	7.2	0.0	0.2	8.5	8.7	0.1	1.7	14.0	15.9
1993	0.2	2.3	7.5	10.0	0.0	0.2	11.6	11.8	0.2	2.5	19.1	21.8
Backpacking												
1 - 1985	8.1	10.0	104.5	122.6	0.0	3.6	396.8	400.4	8.1	13.7	501.3	523.0
1993	11.5	14.2	123.9	149.6	0.0	5.0	539.6	544.6	11.4	19.2	663.6	694.2
2 - 1985	0.2	0.2	2.3	2.7	0.0	0.0	8.9	8.9	0.1	0.3	11.2	11.7
1993	0.3	0.3	3.3	3.8	0.0	0.1	12.1	12.2	0.3	0.6	15.4	16.2
Day Hiking												
1 - 1985	39.1	39.6	917.0	995.6	1.1	39.3	709.8	750.2	40.2	78.8	1626.7	1745.8
1993	55.4	56.0	1354.5	1409.8	1.5	53.4	965.4	1020.2	56.8	109.5	2319.8	2486.1
2 - 1985	0.8	0.8	18.8	20.4	0.0	0.8	14.6	15.4	0.8	1.6	33.3	35.8
1993	1.4	1.5	26.7	29.0	0.0	1.1	19.8	20.9	1.2	2.3	46.6	49.9
Canoeing												
1 - 1985	3.4	100.2	412.6	416.0	1.3	4.3	414.6	420.2	4.7	104.5	827.2	936.4
1993	4.8	141.8	443.7	590.4	1.8	5.9	563.8	571.5	6.5	147.7	1007.6	1161.8
2 - 1985	0.1	2.3	7.1	9.4	0.0	0.1	6.6	6.7	0.1	2.4	13.6	16.1
1993	0.1	3.2	10.0	13.3	0.0	0.1	12.7	12.9	0.2	3.3	22.8	26.1
Picnicking												
1 - 1985	65.8	167.2	1749.6	1712.6	22.9	68.6	1038.7	1130.3	88.8	235.8	2788.3	3112.9
1993	93.2	236.7	2011.2	2341.1	31.2	93.3	1412.6	1537.2	124.5	230.0	3423.8	3876.3
2 - 1985	1.4	3.5	31.4	36.3	0.5	1.5	22.0	23.9	1.9	5.0	53.4	60.3
1993	2.0	5.0	36.5	43.5	0.7	2.0	29.3	31.9	2.6	7.0	65.8	75.4

1 - Total peak season activity days
2 - Number of people participating on peak season days

2. Number of people participating on peak season days.

No data was available for sightseeing/relaxing/pleasure, kayaking, birdwatching, nature study, berrypicking, all-terrain vehicle usage, or waterskiing. Data for angling and hunting was taken from a separate source and is detailed in Sections 9.2.9 and 9.2.10.

9.2.1 Lake Swimming

The demand for lake swimming is greatest by non-resident visitors to the Aroostook Tourism Region (62,100 swimming days) (Table 9.2). There is little comparable demand by residents nor by residents or tourists in Sunrise Tourism Region. Demand is expected to increase by both Maine residents and non-residents but primarily will be felt in the Aroostook Region.

A proportion of this demand could certainly be met by opportunities along the Chiputneticook Lakes. It is likely, however, that swimming consumed along the lakeshore will continue to be in conjunction with other activities such as picnicking by local area users, canoeing by non-local users, etc..

9.2.2 Family Camping

The greatest demand for family camping in both Sunrise and Aroostook Tourism Regions is by Maine residents. The Aroostook Tourism Region sees the greatest demand; currently 81,200 camping days, which is estimated to increase to 114,900 camping days by 1993 (Table 9.2) The Chiputneticook Lakes could offer wonderful family camping opportunities along State Highway #1 with scenic vistas and ready access to the shoreline.

9.2.3 Primitive Camping

The demand for primitive camping opportunities by both Maine residents and non-residents is far greater than for family camping in both Tourism Regions (Table 9.2). Interestingly, the demand is greater in the Aroostook Tourism Region by residents (145,800 camping days), but greater in the Sunrise Tourism Region by non-residents (31,400 camping days). The demand by both user groups is expected to escalate but particularly in the Aroostook Region by Maine residents.

The St. Croix Waterway with its semi-wilderness setting, offers excellent primitive camping opportunities, especially associated with canoeing, hiking, angling and boating. Much of this primitive camping demand will probably be felt along the Waterway in the near future.

9.2.4 Pleasure Boating

Resident demand for pleasure boating opportunities in the Aroostook Tourism Region (76,000 boating days), is nearly one quarter of all demand in the State. Demand by Maine residents in Sunrise Tourism Region (5,800 boating days) is minimal as is non-resident demand in both Tourism Regions. Certainly, it is likely that much of the resident boating demand in Aroostook Tourism Region is, and will continue to be felt throughout the Chiputneticook Lakes which offer wide open boating space.

9.2.5 Backpacking

Demand for backpacking opportunities is primarily by Maine residents in both Tourism Regions (18,100 backpacking days) (Table 9.2). Demand by non-resident visitors is currently, and is predicted to be, minimal, especially in the Sunrise Tourism Region.

A network of backpack, hiking trails and primitive trail camping facilities along the St. Croix Waterway would probably see a fair amount of resident use by backpackers and possibly anglers and hunters as well. Use would no doubt increase dramatically with appropriate advertising/ promotion.

9.2.6 Day Hiking

The demand for day hiking opportunities in both Regions by both residents and non-residents, is low compared with other tourism regions, however. The demand for day hiking opportunities is primarily by Maine residents in both Tourism Regions (Table 9.2). Non-resident demand is negligible in the Sunrise Tourism Region (1,100 hiking days).

Day hiking trails along the St. Croix Waterway would probably receive greatest use from local area users while picnicking or swimming.

9.2.7 Canoeing

The current demand by Maine residents for canoeing opportunties (100,000,000 canoeing days) in the Aroostook Tourism Region is overwhelmingly in that is represents almost 25% of all resident canoeing demand across the State (Table 9.2). Demand in the Sunrise Tourism Region and by non-resident visitors is negligble in contrast. Interestingly, current state-wide demand by non-resident visitors does approximate that of residents, but clearly is not being expressed in either the Sunrise or Aroostook Tourism Regions.

Canoeing demand is expected to increase in both Tourism Regions and by both State residents and non-residents. The largest increases in demand will be by Maine residents in the Aroostook Tourism Region.

The St. Croix Waterway offers excellent canoeing opportunities and certainly many Aroostook Tourism Region residents will consume canoeing along the Waterway. The potential to tap this resident market is excellent, but clearly, services, facilities and management/control techniques must be available to support this demand.

9.2.8 Picnicking

Picnicking is a popular summer time family activity. Current demand for picnicking opportunities is greatest by non-resident visitors in the Aroostook Tourism Region (1,038,700 picnicking days) (Table 9.2). Demand in the Sunrise Tourism Region is negligible in comparison, but still accounts for 68,600 picnicking days. Current demand by Maine residents is greatest in the Aroostook Tourism Region (167,200 picnicking days), followed by the Sunrise Tourism Region with 65,800 picnicking days.

Demand for picnicking opportunities is expected to increase by both State residents and non-residents and in both Tourism Regions.

The St. Croix Waterway could provide three types of picnicking opportunities; roadside, shoreline accessible by vehicle and boat and shoreline accessible by boat only. Roadside picnic sites, specifically along State Highway #1, could be situated to take advantage of the scenic vistas of the Waterway. Use of these sites would be primarily by automobile tourists. Shoreline picnic sites accessible by vehicle and boat could be developed in conjunction with boat landing facilities or at suitable swimming areas. Use of these sites would be primarily by local area visitors who are interested in picnicking in combination with other activities such as swimming, boating, or angling. Shoreline picnic sites accessible by boat only would be used by both Waterway residents for day use and by visitors to the Waterway for overnight accommodation.

9.2.9 Angling

On the basis of the 1980 National Survey of Fishing, Hunting and Wildlife Associated Recreation (Anonymous, 1980), which was considered current, 364,100 freshwater anglers over the age of 16 consume an estimated 5.1 million freshwater angling days in Maine annually (Table 9.3). The

TABLE 9.3: Number of participants, trips, days and hours of participation of resident and non-resident anglers and hunters in Maine (Anonymous, 1980).

	Participants				
	Total*	Residents		Non-Residents	
		Number*	% of Total	Number	% of Total
FRESHWATER					
ANGLING					
Number of Participants	3641.0	2145.0	58.9	1496.0	41.1
Region 3	385.0	241.0	62.6	144.0	37.4
Region 6	618.0	428.0	69.3	188.0	30.7
Days of Participation	51208.0	38219.0	74.6	12989.0	25.4
Region 3	5298.0	2845.0	53.7	2453.0	46.3
Region 6	7693.0	6744.0	87.7	949.0	12.3
Average Days	---	17.8	---	8.7	---
Average Hours	---	4.2	---	4.4	---
Number of Trips					
Total	39833.0	36005.0	90.3	3829.0	9.7
Region 3	3295.0	2683.0	81.4	612.0	18.6
Region 6	6291.0	6,077.0	96.6	214.0	3.4
For Primary Purpose	34496.0	32391.0	93.9	2105.0	6.1
HUNTING					
Number of Participants	2143.0	1741.0	81.2	403.0	18.8
Region 3	230.0	153.0	66.5	77.0	33.5
Region 6	364.0	317.0	87.1	47.0	12.9
Days of Participation	32938.0	29488.0	89.5	3450.0	10.5
Region 3	2509.0	1635.0	65.2	870.0	34.8
Region 6	3889.0	3658.0	94.1	227.0	5.9
Average Days		16.9		8.6	
Average Hours		4.6	–	6.3	
Number of Trips					
Total	32292.0	30674.0	95.0	1617.0	5.0
Region 3	2370.0	1859.0	78.4	511.0	21.6
Region 6	3782.0	3733.0	98.7	49.0	1.3
For Primary Purpose	28438.0	27253.0	95.8	1185.0	4.2

*Numbers in hundred.

majority of these anglers (58.9%) are residents who consume 74.6% of all angling days Residents fish approximately 17.8 days annually for 4.2 hours per day while non-residents fish 8.7 days annually for 4.4 hours per day.

State Wildlife Management Regions 3 and 6 touch on the St. Croix Waterway (MAP I). Demand by anglers in these Regions represents the primary potential demand which may or may not be tapped by the study area. Demand in both Regions is primarily by residents but the number of anglers and days of participation is much greater in Region 6 (Table 9.3).

Each year anglers make approximately 4.0 million trips during which they participate in freshwater angling. Approximately 86% of these trips are for the primary purpose of participating in freshwater fishing. Residents are far more likely to make primary angling trips (93.9%) than are non-residents who presumably fish in Maine while on vacation.

A profile of freshwater anglers indicates that these anglers are predominantly from small towns and rural areas (91.1%), male (75.8%), between age 18 and 44 (48%), while (99.7%), have an annual household income of $5 - 24,999 (61.9%), and have secondary school education (43.3%). There is little difference between Maine resident and non-resident anglers except non-residents tend to be equally from small cities as well as small towns and rural areas and their annual household income is, on the average, somewhat greater.

The average angler spends $17 per day: $10 for travel-related expenses and $7 for equipment and other expenses. The average seasonal expenditure per angler is $269: $132 for travel-related expenses and $137 for equipment and other expenses.

Given the angler demand estimates and the profile of the average angler, it is evident that angling opportunities available along the St. Croix Waterway would appeal to both Maine residents and non-resident visitors. It is likely that the greatest proportion of this demand will be felt throughout the Chiputneticook Lakes primarily by Waterway residents and local area users. The Waterway's angling resources could readily appeal, however, to other Maine residents, particularly those within a two-hour one-way drive and to non-resident visitors seeking good angling in a semi-wilderness setting for several days.

9.2.10 Hunting

On the basis of the 1980 National Survey of Fishing, Hunting and Wildlife Associated Recreation (Anonymous, 1980) there are an estimated 214,300 hunters 16 years or older consuming 3.3 million hunting days annually in Maine (Table 9.3). The average hunter hunts 16.9 days annually. Most (81.2%) in-state hunters are Maine residents consuming 2.9 million hunting days (89.5%). Only an estimated 40,300 non-residents hunt in Maine consuming approximately 345,000 hunting days. Resident hunters hunt, on average, 16.9 days each year, double that of non-residents. Non-residents, however, hunt 6.3 hours per day as compared to residents who hunt 4.6 hours per day.

In State Wildlife Region 3 there are approximately 15,300 hunters: 66.5% are residents consuming 163,500 hunting days and 33.5% are non-residents who consume 34.8% of all Region 3 hunting days. Both resident and non-resident hunters in this Region primarily hunt big game.

Hunting is much more popular in Region 6 where an estimated 36,400 hunters consume 388,900 hunting days. Hunting in this Region is almost entirely by residents (87.1%) who consume 94.1% of all hunting days. Ninety-two percent of all resident hunters in Region 6 hunt big game and 58% hunt small game. Non-resident hunters make up only 12.9% of all the hunters in this Region and 74.5% of them hunt big game. Small game hunting is not very popular with non-residents but 1,200 or 25.5% of non-resident hunters do hunt migratory birds. Migratory birds are not so popular with resident hunters: only 8.5% of resident hunters hunt migratory birds although they do hunt more oftern (6.6 days per hunter) and consume more days (17,900 days).

A profile of all hunters indicates that hunters have the same characteristics as anglers: from small towns and rural areas (93.9%), male (90.7%), 18 to 44 years old (59%), while (99.6%), have an annual household income of $5 - $24,999 (63.7%) and with a secondary school education. There is very little difference in the profiles of big game, small game and migratory bird hunters except small game and migratory bird hunters are somewhat younger and migratory bird hunters have a slightly higher annual household income than do other hunters.

The average hunter spends $14 per day hunting: $6 for travel-related expenses and $8 for equipment and other expenses. Over the entire season, hunters spend an average $222: $90 in travel and $132 on equipment and other expenses. Clearly, hunters do not travel as far from home as do anglers. Because most hunters live in small towns and rural areas, they probably hunt within walking distance or minimal driving distance of their residence.

The St. Croix River Basin supports a diversity of wildlife species with healthy populations of deer, moose, black bear and a variety of furbearers and uplands game. Presumably some of the demand for hunting opportunities, particularly by residents of State Wildlife Region 6, is already being met throughout the St. Croix River Basin but the potential demand that could be tapped by the Basin is tremendous. It is likely that demand in the future will continue to be primarily by State residents and for big game hunting opportunities.

9.2.11 Non-Consumptive Wildlife Associated Recreation

Although 818,800 Maine residents are non-consumptive wildlife-associated recreationists, only an estimated

123,900 residents (15.1% of all non-consumptive recreationists) actually make trips or outings of at least one mile from home for the primary purpose of observing, photographing or feeding wildlife. No frequency of participation data is available but presumably these residents participate more than one day each year.

The remaining 84.9% (694,900) of non-consumptive recreationists participate in non-consumptive activities around their home or enjoy wildlife on trips or outings for other purposes (e.g., fishing, canoeing, camping, etc.).

Given the St. Croix Basin's superb natural and wildlife resources, particularly the numerous rare plants and endangered species (e.g., bald eagle), the potential for both attracting avid naturalists and for maximizing other recreational users visits is excellent.

9.3 WILDERNESS VACATION PACKAGE DEMAND ESTIMATES

To determine the potential demand for wilderness vacation packages on the St. Croix Waterway a random sample of travel agents across Atlantic Canada and north-eastern New England states were interviewed by telephone. These interviews were deliberately cursory in nature in that their intent was solely to provide an indication of current and future potential demand for wilderness vacation packages.

Nearly all travel agencies contacted sell only out-bound travel packages. Very few sell local vacations, let alone wilderness drive-to vacations. Agencies rarely receive enquiries for local wilderness vacations because interested individuals generally plan and prepare their own wilderness vacations with the assistance/information of local/ provincial/state tourist bureaus. Most travel agents turn their very few enquiries over to these tourist bureaus or to local guides/outfitters.

Only one agency interviewed actively promotes and sells wilderness vacation packages primarily in northern Maine. Clients of this combined agency/outfitter are generally upper middle class attorneys, dentists and doctors, corporate clients and frequently fathers/sons from broken homes.

Very few travel agencies foresee selling travel/vacation packages of the type that might be developed on the St. Croix. Of those few agencies who did express some interest in selling such packages, it was stressed that they must be appropriately marketed and very carefully prepared (i.e., good equipment, experienced guides, etc.) in order to assure successful sales.

Summary & Conclusions

CHAPTER 10: SUMMARY AND CONCLUSIONS

10.0 SUMMARY AND CONCLUSIONS

The St. Croix Waterway offers outdoor recreational opportunities in a unique quasi-wilderness setting. As the international boundary between Canada and the United States, the Waterway is predominantly used for recreation by Waterway residents (permanent and seasonal), local area residents as well as attracting recreationists primarily from New Brunswick, Maine and other U.S. states. The potential for expanded recreational use of the Waterway is excellent but only if future management considers recreation as valuable and an equal to industrial use of the Waterway.

This study represented the first methodical approach to developing baseline recreational use data for the Waterway and developing user profiles. For a variety of reasons (see Sect. 3.2 and 6.1.1) it was not possible to accurately estimate total recreational use by all users of the Waterway, although estimates of use by Waterway residents were possible. Despite the difficulties in estimating total recreational use by commercial businesses and non-resident users, it is suggested that data gathered is sufficiently indicative of these target population's recreational use, travel patterns, characteristics, satisfaction with existing opportunities and support for alternative management options and development proposals to allow for relatively reliable conclusions.

It is recommended that, based on this study, no accurate means of estimating total recreational use by non-resident users throughout the entire study area can be expected to yield satisfactory use estimates without supplementing field staff and/or using alternative complementary techniques. Alternatively, reducing the size of the study area would similarly allow for increased individual site monitoring and, hence, more accurate estimates of recreational use by non-resident users.

Similarly, the poor response by commercial recreational businesses, despite an initial favourable reaction, will necessitate a change in the approach to data collection. It may indeed be necessary to conduct personal interviews with these businesses.

10.1 CURRENT RECREATIONAL USE

10.1.1 Total Recreational Use

At a minimum, an estimated 44,100 recreationists used the St. Croix Waterway during the study period consuming an estimated 511,000 recreation days.

10.1.2 Current Primary Market Segments

Recreational use of the St. Croix Waterway is predominantly by:

1. Seasonal Waterway residents whose primary trip purpose is sightseeing/relaxing/pleasure but who seek static water based recreational activities, specifically angling, boating, canoeing opportunities, close to their camp/cottage.
2. Local area residents who typically are day users of the Waterway for angling and swimming opportunities.
3. Non-local American male anglers who visit the Waterway for three to four days.

Other user groups are not as important in terms of numbers of users, although guests of commercial businesses do have a major impact on the local economy.

10.1.3 Distribution of Recreational Use

Waterway residents primarily use the Chiputneticook Lakes for recreational purposes because this is where their camps/cottages are located. Non-resident users predominantly concentrate their recreational activities along the St. Croix River, particularly between St. Croix/Vanceboro and Grand Falls Dam.

10.1.4 Types of Recreational Use

Sightseeing/relaxing/pleasure and angling are overwhelmingly the primary recreational activities engaged in during the summer by all recreational user groups. There are, however, distinct activity preferences by the various user groups. Local area Canadian residents, for example, participate more in swimming and picnicking than do Americans whose primary purpose is angling.

10.1.5 Seasonal Recreational Use

Only Waterway residents and commercial businesses were surveyed on recreational use of the Waterway during the entire preceding year. Although recreational use is not as great by these user groups during the fall, winter and spring, there does appear to be some demand for hunting and sightseeing/relaxing/pleasure opportunities during the fall, ice fishing during the winter and angling in the spring.

10.1.6 User Satisfaction

In general, current recreational user groups are satisfied with most aspects of their visit and their overall visit. There is, however, some dissatisfaction with angling catch and water level fluctuations.

10.2 FUTURE RECREATIONAL DEVELOPMENT OF THE ST. CROIX WATERWAY

10.2.1 Potential Market Segments

A good St. Croix Waterway management plan will consider recreation as a valuable component of the overall plan and will direct future recreational development and use of the Waterway. There are a number of potential recreational market segments which may or may not be considered appropriate and, hence, may or may not be encouraged in the management plan, including;

1. nature study buffs and birdwatchers,
2. anglers, particularly American smallmouth bass anglers,
3. hunters,
4. Americans seeking primitive camping opportunities,
5. canoeists, particularly Americans,
6. day use shore users seeking drive-in swimming, picnicking and shoreline angling, and
7. boaters seeking power boating (10 hp or greater) opportunities.

10.2.2 Future Management Alternatives

Current recreational users registered support for a number of future recreational management alternatives which maybe essential to controlling and/or maximizing recreational use/experience including increased restrictions on fires, stocking the Waterway, a mandatory carry in/carry out litter policy, increased patrols for safety and security and the introduction of regulations/zoning for shoreline development. Current users registered the most opposition to mandatory pre-registration to camp within the Waterway, while non-resident users were also opposed to limiting party size, the length of stay of overnight visitors and mandatory portable cooking equipment.

10.2.3 Future Recreational Developments

In general, current recreational user groups are satisfied with the St. Croix Waterway as it is now. A large proportion of both Waterway residents and commercial businesses did not support any form of future development. The only development alternative supported by all three user groups was an increased number of campsites accessible by water only.

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LITERATURE CITED

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APPENDIX I

TOURISM, RECREATION & HERITAGE
TOURISME, LOISIRS & PATRIMOINE
NEW BRUNSWICK NOUVEAU-BRUNSWICK

September 9, 1986

Dear Sir/Madam:

The New Brunswick Department of Tourism, Recreation and Heritage in conjunction with the Maine State Planning Office and the Maine Department of Conservation, with funding from the Canada/New Brunswick Subsidiary Agreement on Tourism Development has contracted Amulet Consulting Ltd., and the Atlantic Center for the Environment to implement a recreation market demand survey for the St. Croix Waterway Recreation Area (SCWRA).

An important component of this study is the determination of recreational use by year-round and seasonal (cottage/camp) residents living on or near the Chiputneticook Lakes or St. Croix River. The recreational information we require is your participation in outdoor recreational activities on the Chiputneticook Lakes (Palfrey, East Grand, Spednic and North Lakes) and on the St. Croix River (from St. Croix/ Vanceboro to St. Stephen/Calais during the preceding year (September 1 1985 to August 31, 1986).

This questionnaire has been mailed to a select group of year-round and seasonal (cottage/camp) residents. This questionnaire is ANONYMOUS and in no way will be used for anything other than determining the demand for recreation in the SCWRA.

You will also find enclosed a stamped, self-addressed envelope to return the questionnaire to the Department of Tourism, Recreation and Heritage. We would appreciate your returned questionnaire NO LATER THAN SEPTEMBER 23, 1986.

Should you encounter any difficulties in answering this questionnaire or should you have any questions regarding this study, please call June Elder at 453-2624 between Monday and Friday, 8:30 am - 4:30 pm.

I would like to thank you in advance for taking the time to assist us with this study.

Yours truly,

D. JOHN ARCHIBALD
Executive Director
Planning & Development

DJA/Jml

1986 ST. CROIX WATERWAY RECREATION AREA (SCWRA)
RECREATIONAL USE SURVEY

DIRECTIONS: PLEASE ANSWER EACH QUESTION BY CIRCLING THE APPROPRIATE NUMBER OR BY FILLING IN THE APPROPRIATE ANSWER. PLEASE ANSWER EACH QUESTION BASED ON ONLY YOUR RECREATIONAL USE OF THE CHIPUTNETICOOK LAKES (NORTH, EAST GRAND, SPEDNIC AND PALFREY LAKES) AND THE ST. CROIX RIVER (FROM ST. CROIX/VANCEBORO TO ST. STEPHEN/CALAIS).

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1. Is your home/cottage on or near the St. Croix Waterway Recreation Area (SCWRA) a:

   01. Permanent year-round residence
   02. Seasonal residence
   03. I own both a permanent year-round and a seasonal residence. (Please answer all questions for both permanent year-round residence and seasonal residence.)

2. Is your home/cottage in:

   01. New Brunswick
   02. Maine

3. Does your home/cottage have private access to the St. Croix River or Chipuneticook Lakes?

   01. Yes
   02. No

4. If your residence is a SEASONAL residence, where is your permanent residence?

   City: ____________________
   County: ____________________
   State/Province: ____________________

5. If your residence is SEASONAL, please estimate the number of visits you made to your camp/cottage and the average length of stay per visit (number of days) during each of the following seasons.

Season	Estimated Number of Visits	Average Length Of Stay Per Visit
01. FALL: Sept. 1/85-Dec. 31/85		
02. WINTER: Jan. 1/86-Mar. 31/86		
03. SPRING: Apr. 1/86-May 31/86		
04. SUMMER: June 1/86-Aug. 31/86		

6. If your residence is PERMANENT, please estimate the number of days you visited/used the SCWRA for recreational purposes for each of the following seasons. Please note that 1 day of recreational use is based on recreational participation for 1 hour or more.

Season	Number of Days
01. FALL: Sept. 1 - Dec. 31/85	
02. WINTER: Jan. 1 - Mar. 31/86	
03. SPRING: Apr. 1 - May 31/86	
04. SUMMER: June 1 - Aug. 31/86	

7. What was the typical number of people in your party when you participated in recreational activities in the SCWRA during each of the following seasons?

Season	Typical Number Of People in Party
01. FALL: Sept. 1/85-Dec. 31/85	
02. WINTER: Jan. 1/86-Mar. 31/86	
03. SPRING: Apr. 1/86-May 31/86	
04. SUMMER: June 1/86-Aug. 31/86	

8. What outdoor recreational activities did you participate in during each of the following seasons? Please select from the activities listed below and record the corresponding number in the following chart.

Activities

01. Sightseeing/relaxing/pleasure (includes general vacation)
02. Canoeing
03. Canoeing with a motor
04. Kayaking
05. Non-motorized boating
06. Boating with motor 9.9 hp or less
07. Boating with motor 10hp or more
08. Camping
09. Angling
10. Hiking
11. Picnicking
12. Sailboating
13. Sailboarding
14. Birdwatching
15. Nature study
16. Berry picking
17. All-terrain vehicles
18. Swimming
19. Waterskiing
20. Hunting
21. Cross country skiing
22. Snowmobiling
23. Skating
24. Ice Fishing
25. Winter camping
26. Snowshoeing
27. Other: ______
    ______
    ______

Season	Activities Participated In
01. FALL: Sept. 1/85-Dec. 31/85	
02. WINTER: Jan. 1/86-Mar. 31/86	
03. SPRING: Apr. 1/86-May 31/86	
04. SUMMER: June 1/86-Aug. 31/86	

b) In the preceding chart please circle the one (1) activity (corresponding number) for each season which was your primary activity (primary visit purpose) for every season. (FOR EXAMPLE: during the April 1-May 31, 1986 season you may have participated in canoeing (02), camping (08), angling (09), and hiking (10) but angling was your primary activity.)

9. In using the SCWRA for outdoor recreation, did you use any of the following New Brunswick inland lakes between Sept. 1, 1985, and August 31, 1986.

- 01. First Eel L.
- 02. Second Eel L.
- 03. Skiff Lake
- 04. Grassy L.
- 05. Moose L.
- 06. Lake Amelia
- 07. Deer Lake
- 08. Pirate L.
- 09. Riley L.
- 10. Third Eel L.
- 11. La Coote L.
- 12. Cranberry L.
- 13. Sixth Lake
- 15. Fifth L.
- 16. Bolton L.
- 17. Musquash L.
- 18. Parker L.
- 19. Greenland L.
- 20. Tuttle L.
- 21. East Brook L.
- 22. First L.
- 23. Third L.
- 24. Modsley L.
- 25. McAdam L.
- 26. Tomilson L.
- 27. Pleasant L.
- 28. Did not visit any of the above inland lakes

10. What type of vehicle did you generally drive to reach the SCWRA for recreational purposes?

- 01. Car
- 02. Truck/Van
- 03. Recreational vehicle
- 04. Motorcycle
- 05. Jeep or dune buggy
- 06. All-terrain vehicle
- 07. Bicycle
- 08. Walking
- 09. Airplane
- 10. Other: ____________________

11. If your residence is SEASONAL, what did you use for camp drinking water between September 1, 1985 and August 31, 1986?

- 01. Private well
- 02. Untreated lake/river water
- 03. Boiled lake/river water
- 04. Lake/river water treated with purification tablets
- 05. Carried in water
- 06. Spring water (please indicate location of spring/springs utilized): ______________
- 07. Other: ____________________
- 08. Did not use drinking water

12. What is your occupation?

- 01. Engineering and Science
- 02. Managerial
- 03. Law and Social Science
- 04. Teaching and Education
- 05. Medicine and Health
- 06. Religion
- 07. Arts and Literature
- 08. Clerical
- 09. Sales
- 10. Services
- 11. Fishing
- 12. Forestry
- 13. Farming
- 14. Mining
- 15. Processing
- 16. Machining
- 17. Manufacturing
- 18. Construction
- 19. Transportation
- 20. Student
- 21. Retired
- 22. Unemployed
- 23. Never worked before
- 24. Military
- 25. Homemaker
- 26. Other: ____________

13. How many weeks vacation do you have?

- 01. 1 week
- 02. 2 weeks
- 03. 3 weeks
- 04. 4 weeks
- 05. 5 weeks
- 06. 6 weeks
- 07. 7 weeks
- 08. 8 or + weeks
- 09. Did not state
- 10. Retired

14. Could you please indicate your total family income range?

US Currency	Canadian Currency
01. under $10,000	07. under $9,000
02. 10 - 19,999	08. 9 - 19,999
03. 20 - 29,999	09. 20 - 29,999
04. 30 - 39,999	10. 30 - 39,999
05. over 40,000	11. over 40,000
06. did not state	12. did not state

15. Are you a member of:

- 01. A canoe club
- 02. A rod and gun club (target shooting)
- 03. A naturalist/conservation club
- 04. A fish and game club (conservation orientation)
- 05. A salmon club
- 06. Other: ____________________
- 07. None of the above

16. Would you please indicate your level of satisfaction with the following aspects of your visit to the SCWRA over the period September 1, 1985 to August 31, 1986, based on a scale of 0 to 4 where:

0 - not applicable/can not rate
1 - very dissatisfied
2 - dissatisfied
3 - satisfied
4 - very satisfied

	Rating Number
CAMPSITES	
Number of designated, primitive camping sites located on the Chipuneticook Lakes or St. Croix River	
Location of these sites	
Maintenance of these sites	
Availability of firewood at these sites	
ANGLING	
Angling catch	
Overall angling experience	
SERVICES	
Availability of public services (maps, parking, boat landings, etc.)	
Availability of commercial services (food, gas, bait, etc.)	
WATER LEVEL (Satisfaction with water level between September 1, 1985 and August 31, 1986	
OVERALL SATISFACTION	

17. During the period September 1, 1985 and August 31, 1986, have you experienced any conflict with:

- 01. Motor boats
- 02. Commercial forest harvesting
- 03. Cottage development
- 04. Other: ____________________

18. Should use of the SCWRA increase in the future by recreationists who do not own a home/cottage/camp along the Chipuneticook Lakes or St. Croix River, would you please indicate your support for the following recreational management alternatives that may be essential to ensuring the quality of the experience that currently exists in the SCWRA. Please indicate your support on the basis of a scale from 1 to 5 where:

1 - totally opposed
2 - opposed
3 - indifferent
4 - supportive
5 - very supportive

Management Alternative	Degree of Support
01. Manadatory reservation to camp in the SCWRA	
02. Mandatory permits to camp in the SCWRA	
03. Limiting party size at a campsite	
04. Limiting length of over-night stay at a campsite	
05. Increased restrictions on fires (eg. location, time, etc.)	
06. Mandatory requirement for portable cooking equipment (gas, propane)	
07. Stocking the SCWRA with fish	
08. Mandatory carry in/ carry out policy (litter)	
09 Increased patrols for safety and security	
10. Regulations/zoning restrictions for shoreline development	

19. Please indicate which of the following developments you believe are desirable for the SCWRA?

01. Outdoor recreational training centres
02. Environmental/naturalist centres
03. Interpretive service or naturalist tours
04. Campsites accessible by vehicle only
05. Campsite accessible by water only
06. Campsites accessible by trail only
07. Multi-purpose campsites accessible by vehicle, water and/or trail
08. Family vacation camps
09. Outfitters/commercial lodges
10. Commercial service/supply centres (bait, food, rental/ sales of outdoor recreational equipment, gasoline, etc.
11. Shuttle service and parking for canoeists, etc.
12. Other: ______________________
13. No developments are desireable

20. If your residence is SEASONAL, please estimate in the chart below the total amount you spent for your entire visitor party on an average/typical visit to your camp/cottage during this past summer (June 1, 1986 - August 31, 1986).

Please ✓ : ________U.S. Currency or ________Canadian Currency

EXPENDITURE CATEGORY	TOTAL$ SPENT	$SPENT IN			
		*LOCAL MAINE	MAINE	*LOCAL N.B.	N.B.
TRANSPORTATION from home to cottage/camp (including gas, auto repairs, ferry crossings, tolls, airfare, car rental, etc.)					
ACCOMMODATION (accommodation required in driving to your camp/ cottage not including food portion of bill)					
FOOD AND BEVERAGES IN RESTAURANTS					
FOOD AND BEVERAGES IN STORES					
OUTDOOR RECREATION EXPENDITURES (fishing permits, bait, guidebooks, maps, boat gas, etc.)					
OUTFITTER/GUIDE SERVICES					
RECREATIONAL EQUIPMENT PURCHASED SPECIFICALLY FOR THIS TRIP (camping, fishing, hiking, boating gear, etc.)					
RENTAL EQUIPMENT (canoes, etc.)					
MISC. MERCHANDISE (souvenirs, film, boat repairs, etc.)					
IMPROVEMENTS/MAINTENANCE OF YOUR CAMPSITE					

* LOCAL MAINE includes the communities of Orient, Danforth, Topsfield, Vanceboro, Princeton, Woodland, Calais and others along Route #1.

* LOCAL NEW BRUNSWICK includes Canterbury, Fosterville, McAdam, St. Stephen.

21. If your residence is PERMANENT, could you please estimate in the chart below your total expenditures for the entire summer season (June 1, 1986 to August 31, 1986) as they relate to your use of the SCWRA for outdoor recreational activities.Please note that some expenditure categories may NOT apply to you.

Please ✓ : ____________U.S. Currency or ___________Canadian Currency

EXPENDITURE CATEGORY	TOTAL$ SPENT	$SPENT IN			
		*LOCAL MAINE	MAINE	*LOCAL N.B.	N.B.
GAS EXPENDITURES (from home to SCWRA)					
ACCOMMODATION (cottage rental, camping fee, etc.					
FOOD AND BEVERAGES IN RESTAURANTS					
FOOD AND BEVERAGES IN STORES					
OUTDOOR RECREATION EXPENDITURES (fishing permits, bait, guidebooks, maps, boat gas, etc.)					
OUTFITTER/GUIDE SERVICES					
RECREATIONAL EQUIPMENT PURCHASED SPECIFICALLY FOR THIS TRIP (camping, fishing, hiking, boating gear, etc.)					
RENTAL EQUIPMENT (canoes, etc.)					
MISC. MERCHANDISE (souvenirs, film, boat repairs, etc.)					

* LOCAL MAINE includes the communities of Orient, Danforth, Topsfield, Vanceboro, Princeton, Woodland, Calais and others along Route #1.

* LOCAL NEW BRUNSWICK includes Canterbury, Fosterville, McAdam, St. Stephen.

Thank you very much for your assistance. Should you have any comments/suggestions, please use the space below.

APPENDIX III

TOURISM / TOURISME

GOOD DAY!

The purpose of this letter is to introduce you to an Atlantic Center for the Environment (Quebec-Labrador Foundation, Inc.) staff member. The New Brunswick Department of Tourism, Recreation and Heritage, in conjunction with the Maine State Planning Office and the Maine Department of Conservation, with funding from the Canada/New Brunswick Subsidiary Agreement on Tourism Development, has contracted the Altantic Center to implement a Market Demand Survey for the St. Croix Waterway Area. Part of the survey is to interview you, the user. Thank you for your cooperation. If you have any questions please address them to my office.

John Archibald
Executive Director
Tourism, Recreation & Heritage

CASIER POSTALE P.O. BOX 12345, FREDERICTON, N.B., CANADA, E3B 5C3

1986 ST. CROIX WATERWAY RECREATION AREA
RECREATIONAL USE SURVEY

DIRECTIONS FOR INTERVIEWERS

Please answer each question by circling the correct number for the appropriate answer/answers or by filling in the appropriate answer/answers.

TO BE COMPLETED BY INTERVIEWER BEFORE INTERVIEW

1. Exit Station

   01. North Lake Provincial Park (Cdn)
   02. Sunset Park (US)
   03. Fosterville (US and Cdn)
   04. Red Bank (Cdn)
   05. Butterfield Landing (US)
   06. Greenland Point (US)
   07. Forest City (US and Cdn)
   08. Forest City Landing (Cdn)
   09. Spruce Mountain Landing (US)
   10. Spednic Lake Road (Cdn)
   11. Palfrey Lake Lodge (Cdn)
   12. Spednic Lake Prov. Park (Cdn)
   13. St. Croix/Vanceboro (Cdn and US)
   14. Little Falls (US and Cdn)
   15. Beaconsfield Rd. (Cdn)
   16. Loon Bay (Cdn)
   17. Loon Bay (US)
   18. Gleasons Point (Cdn)
   19. Grand Falls Flowage Rd. (US)
   20. Grand Falls Dam (Cdn and US)
   21. Woodland, Maine (US)
   22. St. Stephen Bridge (Cdn and US)

2. Month

   01. May
   02. June
   03. July
   04. August
   05. September

3. Day

   01. Monday
   02. Tuesday
   03. Wednesday
   04. Thursday
   05. Friday
   06. Saturday
   07. Sunday

4. Date: ____________________

5. Hour

   01. 9 am - 12 pm
   02. 12 pm - 6 pm
   03. 6 pm - 9 pm

INTERVIEW TO BE ADMINISTERED TO HEAD OF EACH VISITOR/USER PARTY

6. Have you been interviewed during a previous visit to the SCWRA this year.

   01. Yes
   02. No

7. Where do you live? (C=County)

   UNITED STATES

   01. Androscoggin County
   03. Aroostock C.
   05. Cumberland C.
   07. Franklin C.
   09. Hancock C.
   11. Kennebec C.
   13. Knox County
   15. Lincoln C.
   17. Oxford County
   19. Penobscot C.
   21. Piscataquis County
   23. Sagadahoc C.
   25. Somerset C.
   27. Waldo County
   29. Washington C.
   31. York County
   32. New Hampshire
   33. Vermont
   34. Massachusetts
   35. Connecticut
   36. Rhode Island
   37. New York
   38. New Jersey
   39. Pennsylvania
   40. Other States

   CANADA

   41. Fredericton
   42. Saint John
   43. Moncton
   44. Charlotte C.
   45. Saint John C.
   46. Kings County
   47. Queens County
   48. Sunbury C.
   49. York County
   50. Carleton C.
   51. Victoria C.
   52. Madawaska C.
   53. Restigouche C.
   54. Gloucester C.
   55. Northumberland County
   56. Kent County
   57. Westmorland C.
   58. Albert County
   59. Nova Scotia
   60. Prince Edward Island
   61. Newfoundland
   62. Quebec
   63. Ontario
   64. Other Canada

   ELSEWHERE

   65. Germany
   66. Holland
   67. England/Scotland/Wales
   68. Other Europe
   69. Other: ____________________

8. If you are a resident of Maine, what town do you live in?

   Town: ____________________
   Geocode:
   (completed by interviewer) __________

9. Are you (interviewer to note based on Question 7 above)?

   01. Canadian 02. American 03. Other

10. Do you live in the local area (see attached map)?

    01. Yes 02. No

11. How many people are there in your trip/travel party (interviewer observation)? __________

12. Please describe the composition of your trip/travel party (interviewer observation).

    01. Alone
    02. Adults only (friends and/or relatives)
    03. Family
    04. Organized group (Boy Scouts, school groups, etc.)
    05. Other: ____________________

13. In which of the following age and sex categories do members of your travel party fall (interviewer observation: note number in each age category).

Age	Male	Female
12 years of age or under		
13-18		
19-24		
25-49		
50+		

14a. What activities did you participate in while visiting the SCWRA?

01. Sightseeing/relaxing/pleasure (includes general vacation)
02. Canoeing
03. Canoeing with a motor
04. Kayaking
05. Non-motorized boating
06. Boating with motor 9.9 hp or less
07. Boating with motor 10hp or more
08. Camping
09. Angling
10. Hiking
11. Picnicking
12. Sailboating
13. Sailboarding
14. Birdwatching
15. Nature study
16. Berry picking
17. All-terrain vehicles
18. Swimming
19. Waterskiing
20. Hunting
21. Other: ________
____

b) Of the activities you participated in while visiting the SCWRA (see Question 14a), please identify which one (1) activity was your primary activity (primary purpose).

____

c) If you participated in canoeing, how would you rate your canoeing ability.

01. Beginner
02. Intermediate
03. Expert

d) If you participated in kayaking, how would you rate your kayaking ability.

01. Beginner
02. Intermediate
03. Expert

15. Where did you enter the SCWRA? NOTE TO INTERVIEWER: Please use exit stations in Question #1 and enter Code Number.
Entry Point Code Number: ________
Other: ________

16. On this map would you please indicate which zone/zones you travelled in. ________

17. In visiting the SCWRA, did you visit any of the following inland lakes?

01. North L.
02. First Eel L.
03. Second Eel L.
04. Skiff Lake
05. Grassy L.
06. Moose L.
07. Lake Amelia
08. Deer L.
09. Pirate L.
10. Riley L.
11. Third Eel L.
12. La Coote L.
13. Cranberry L.
14. Sixth L.
15. Fifth L.
16. Bolton L.
17. Musquash L.
18. Parker L.
19. Greenland L.
20. Tuttle L.
21. East Brook L.
22. First L.
23. Third L.
24. Modsley L.
25. McAdam L.
26. Tomilson L.
27. Pleasant L.

18. Have you visited the SCWRA before?

01. Yes (Please go to 18b)
02. No (Please go to 19)

b) When was your previous visit?

01. Earlier this year.
02. Prior to 1986.

19. How many days and nights did you plan to spend in the SCWRA?

Number of days planned: ________
Number of nights planned: ________

20. How many days and nights did you actually spend in the SCWRA?

Number of days spent: ________
Number of nights spent: ________

21. Prior to your visit to the SCWRA, did you consult any of the following sources for information?

01. Friends or relatives who have visited the SCWRA previously
02. Province of New Brunswick toll-free travel information telephone number
03. Georgia-Pacific personnel
04. Province of New Brunswick forest rangers
05. Maine Geographic Canoeing map
06. The Maine Atlas
07. The AMC River Guide
08. Maine Publicity Bureau
09. Maine Forest Service
10. Other: ________

22. What type of vehicle did you drive to reach the SCWRA?

OWNED	RENTED
01. Car	08. Car
02. Truck	09. Truck
03. Recreational vehicle	10. Recreational vehicle
04. Motorcycle	11. Motorcycle
05. Jeep, dune buggy, or 4-wheel drive	12. Jeep, dune buggy, or 4-wheel drive
06. All-terrain vehicle	13. All-terrain vehicle
07. Other: ______	14. Other: ______

23. If you stayed overnight while visiting the SCWRA, what type of accommodation did you use?

01. Motel
02. A private camp or cottage
03. A commercial (rented) camp or cottage
04. A commerical lodge/outfitter
05. A Provincial Park (North Lake or Spednic Lake)
06. A designated camping site
07. Camped at an undeveloped site
08. Other accommodation (please specify):
____

24a. How many people in your trip/travel party fished today? ______________

b) What was the total angling effort in hours for those people in your trip/travel party who fished today? ______________ hours

c) How many people in your trip/travel party fished successfully today (caught fish)? ______________

d) How many fish by species did members of your trip/travel party catch today?

SPECIES	NUMBER
Smallmouth Bass	
Salmon	
Brook Trout	
Lake Trout	
White Perch	
Yellow Perch	
Pickerel	
Brown Bullhead	
Other	

25. Prior to entering the SCWRA did you obtain a camp fire permit?

01. Yes
02. No

26. During your visit to the SCWRA, what did you use for drinking water?

01. Untreated lake/river water
02. Boiled lake/river water
03. Lake/river water treated with purification tablets
04. Carried in water
05. Spring water (please indicate location of spring/springs utilized): ______________
06. Other: ______________

27. What is your occupation?

01. Engineering and Science
02. Managerial
03. Law and Social Science
04. Teaching and Education
05. Medicine and Health
06. Religion
07. Arts and Literature
08. Clerical
09. Sales
10. Services
11. Fishing
12. Forestry
13. Farming
14. Mining
15. Processing
16. Machining
17. Manufacturing
18. Construction
19. Transportation
20. Student
21. Retired
22. Unemployed
23. Never worked before
24. Other: ______________

28. How many weeks vacation do you have?

01. 1 week
02. 2 weeks
03. 3 weeks
04. 4 weeks
05. 5 weeks
06. 6 weeks
07. 7 weeks
08. 8 or + weeks
09. Did not state
10. Retired

29. Are you a member of:
01. A canoe club
02. A rod and gun club
03. A naturalist/conservation club
04. A fish and game club
05. A salmon club
06. Other: ______________

30. Which of the following have you visited during the past five (5) years for recreational purposes?

01. Allagash River
02. Saint John River
03. Miramichi River
04. Kedgewick-Restigouche River
05. Upsalquitch River
06. Nepisiguit River
07. Tobique River
08. Saco River
09. East Branch Penobscot River
10. West Branch Penobscot River
11. Machias River (Washington C.)

31. Prior to your visit how would you describe your expectations of the SCWRA? Please indicate on the scale below, the EXACT NUMBER that most closely corresponds with your expectations.

1-------2--------3--------4--------5

1=true wilderness
5=fully serviced recreational facilities (eg. electricity, showers, etc.)

32. Would you please indicate your level of satisfaction with the following aspects of your visit to the SCWRA based on a scale of 1 to 4 where:
1 - very dissatisfied
2 - dissatisfied
3 - satisfied
4 - very satisfied

	Rating Number
Number of designated campsites	
Siting of campsites (view, accessibility, etc.)	
Maintenance of campsites	
Portages (well marked, cleared)	
Overall angling experience	
Angling catch	
Availability of public services (maps, parking boat landings, etc.)	
Availability of commercial services (food, gas, bait, etc.)	
Availability of firewood	
Privacy from other user-parties	
Conflicts with other users	
Motor boats	
Commercial forest harvesting	
Cottage development	
Other:	
Satisfaction with water level	
Overall visit	

33. If you participated in canoeing/kayaking while visiting the SCWRA, how would you describe your expectations of the canoeing/kayaking water prior to your visit?

01. Flatwater
02. Whitewater-beginner
03. Whitewater-intermediate
04. Whitewater-expert

34. Will you visit the SCWRA again?

01. Yes
02. No

35. Should use of the SCWRA increase in the future, would you please indicate your support for the following recreational management alternatives that may be essential to ensuring the quality of the experience that currently exists in the SCWRA. Please indicate your support on the basis of a scale from 1 to 5 where:

1 - totally opposed
2 - opposed
3 - indifferent
4 - supportive
5 - very supportive

Management Alternative	Degree of Support
01. Manadatory pre-registration to camp in the SCWRA	
02. Mandatory recreational permits to camp in the SCWRA	
03. Limiting party size	
04. Limiting length of stay of overnight visitors	
05. Increased restrictions on fires (eg. location, time, etc.)	
06. Mandatory requirement for portable cooking equipment (gas, propane)	
07. Stocking the SCWRA	
08. Mandatory carry in/ carry out policy (litter)	
09. Increased patrols for safety and security	
10. Regulations/zoning for shoreline development	

36. Would you be willing to pay a camping fee for overnight use of the SCWRA?

01. $10.00
02. $ 7.50
03. $ 5.00
04. $ 2.50
05. Not willing to pay a user fee
06. Did not state

37. Please indicate which of the following developments you believe are desirable for the SCWRA?

01. Outdoor recreational training centres
02. Environmental/naturalist centres
03. Interpretive service or naturalist tours
04. Campsites accessible by vehicle only
05. Campsite accessible by water only
06. Campsites accessible by trail only
07. Multi-purpose campsites accessible by vehicle, water and/or trail
08. Family vacation camps
09. Outfitters/commercial lodges
10. Commercial service/supply centres (bait, food, rental/ sales of outdoor recreational equipment, gasoline, etc.
11. Shuttle service for canoeists, etc.
12. Other: ____________________

---

38. What was the total amount you and your party spent on this trip to the SCWRA (include credit card purchases)?

____________________ ($U.S.)   ____________________ ($Cdn)

39. Would you please attempt to breakdown your total trip expenditures as to how much you spent or expect to spend on each of the following (to the nearest dollar)?

__________U.S. Currency   __________Canadian Currency

EXPENDITURE CATEGORY	TOTALS SPENT	$SPENT IN			
		LOCAL MAINE	MAINE	LOCAL N.B.	N.B.
TRANSPORTATION (including gas, auto repairs, ferry crossings, tolls, airfare, car rental, etc.					
ACCOMMODATION (not including food portion of bill)					
FOOD AND BEVERAGES IN RESTAURANTS					
FOOD AND BEVERAGES IN STORES					
OUTDOOR RECREATION EXPENDITURES (fishing permits, bait, guidebooks, maps, etc.)					
OUTFITTER/GUIDE SERVICES					
RECREATIONAL EQUIPMENT PURCHASED SPECIFICALLY FOR THIS TRIP (camping, fishing, hiking, boating gear, etc.)					
RENTAL EQUIPMENT (canoes, etc.)					
MISC. MERCHANDISE (souvenirs, film, etc.)					

APPENDIX V

APPENDIX V

Individual survey site coverage by month and by day for all days between May 17 to September 1, 1986 ar weekends (Saturday and Sunday) from September 6 to September 14 inclusive.

MAY

EXIT POINT	MON.	TUES.	WED.	THURS.	FRI.	SAT.	SUN.
North Lake PP (CDN)							
Sunset Park (US)		ELIMINATED FROM SCHEDULE					
Fosterville (US & CDN)	9-5* (pretest)						
Red Bank (CDN)							
Butterfield LDG. (US)							
Greenland Cove Campground (US)							
Greenland Pt. (US)							
Greenland Cove Camps							
Forest City (US & CDN)				9-5(0)		9-5(1)	
Forest City Ldg. (US)					12-8(2)		
Spruce Mtn. Ldg. (US)							
Spednic Lake Rd. (CDN)				9-5(0)			
Rideouts							
Palfrey Lake Lodge (CDN)						12-8	
Spednic Lake PP (CDN)						12-8	
St. Croix/Vanceboro (US & CDN)		9-5 (pretest)	9-5(1)			12-8 (pretest)	
Little Falls (US)							12-8(2)
Beaconsfield Rd. (CDN)						12-8(0)	
Loon Bay (US & CDN)							12-8 (US) (pretest)
Gleason Point (CDN)							
Squirrel Point (US)							
Grand Falls Flowage Rd. (US)		ELIMINATED FROM SCHEDULE					
Grand Falls Dam (US & CDN)	9-5(2)**						
Princeton (US)							
Woodland, Maine (US)							
Milltown (US & CDN)							

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*9-5: 9 a.m. to 5 p.m., etc.

**( ): number of field interviews completed.

APPENDIX V Continued

JUNE

EXIT POINT	MON.	TUES.	WED.	THURS.	FRI.	SAT.	SUN.
North Lake PP (CDN)						12-8(0)	
Sunset Park (US)							
Fosterville (US & CDN)						12-8(2)	
Red Bank (CDN)							
Butterfield Ldg. (US)	12-8(0)						9-5(3)
Greenland Cove Campground (US)							9-5(2)
Greenland Pt. (US)		9-5(0)					9-5(3)
Greenland Cove Camps							
Forest City (US & CDN)							9-5(1)
Forest City Ldg. (US)				12-8(3)		12-8(0)	
Spruce Mtn. Ldg. (US)							
Spednic Lake Rd. (CDN)							
Rideouts							
Palfrey Lake Lodge (CDN)							
Spednic Lake PP (CDN)					12-8(0)	12-8(1)	
St. Croix/Vanceboro (US & CDN)			9-5(0)		12-8(2)	9-5(2)	
Little Falls (US)			9-5(0)		12-8(0)		
Beaconsfield Rd. (CDN)							12-7(3)
Loon Bay (US & CDN)	9-5(0)						12-8(3) 9-5(3)
Gleason Point (CDN)	9-5(0)	9-5(0)					
Squirrel Point (US)						9-5(4)	
Grand Falls Flowage Rd. (US)							
Grand Falls Dam (US & CDN)	9-5(6)	9-5(0)	12-8(3)				9-5(1) 12-7(13
Princeton (US)						12-8(2)*	
Woodland, Maine (US)						12-8(1)*	
Milltown (US & CDN)		9-5(3)				12-8(9)	

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*9-5: 9 a.m. to 5 p.m., etc.

**( ): number of field interviews completed.

APPENDIX V Continued

JULY

EXIT POINT	MON.	TUES.	WED.	THURS.	FRI.	SAT.	SUN.
North Lake PP (CDN)		9-5(3)	9-5(3)			9-5(1)	9-5(5)
Sunset Park (US)							
Fosterville (US & CDN)			9-5(0)			9-5(1)	9-5(1)
Red Bank (CDN)							9-5(0)
Butterfield Ldg. (US)					12-8(0)	12-8(1)	
Greenland Cove Campground (US)					12-6(0)		
Greenland Pt. (US)					12-6(1) 12-8(1)	12-8(6)	
Greenland Cove Camps					12-6(0) 12-8(0)		
Forest City (US & CDN)			9-5(3)			12-8(5)	
Forest City Ldg. (US)						12-8(0)	9-5(2)
Spruce Mtn. Ldg. (US)		9-5(1) 12-8(0)					
Spednic Lake Rd. (CDN)		9-5(0) 12-8(0)					
Rideouts					12-8(3)		
Palfrey Lake Lodge (CDN)	12-5(0)						
Spednic Lake PP (CDN)	12-5(0)						
St. Croix/Vanceboro (US & CDN)	10-6(2)	9-5(8)			12-6(6)	10-6(3)	10-5(8
Little Falls (US)	9-5(1)			12-6(0)	10-6(2)	10-5(2)	
Beaconsfield Rd. (CDN)	10-6(0)					10-5(1)	
Loon Bay (US & CDN)		9-5(0)				10-5(4)	9-5(4) 9-5(0)
Gleason Point (CDN)							
Squirrel Point (US)					11-6(1)	9-5(4)	
Grand Falls Flowage Rd. (US)							
Grand Falls Dam (US & CDN)		9-5(3)	12-8(2)	11-6(5)	9-5(1)	9-5(3)	9-5(1)
Princeton (US)	9-5(3)	9-5(0)				9-5(1)	
Woodland, Maine (US)	9-5(2)	10-6(3) 9-5(1)				9-5(0)	9-5(1)
Milltown (US & CDN)				11-5(4)			12-8(1

*9-5: 9 a.m. to 5 p.m., etc.

**( ): number of field interviews completed.

APPENDIX V Continued

AUGUST

EXIT POINT	MON.	TUES.	WED.	THURS.	FRI.	SAT.	SUN.
North Lake PP (CDN)							
Sunset Park (US)							
Fosterville (US & CDN)							
Red Bank (CDN)							
Butterfield Ldg. (US)						11-5(0)	
Greenland Cove Campground (US)							
Greenland Pt. (US)						11-5(2) 11-5(1)	
Greenland Cove Camps							
Forest City (US & CDN)							
Forest City Ldg. (US)							
Spruce Mtn. Ldg. (US)							
Spednic Lake Rd. (CDN)							
Rideouts						11-5(1)	
Palfrey Lake Lodge (CDN)							
Spednic Lake PP (CDN)							
St. Croix/Vanceboro (US & CDN)		12-5(0)		12-6(0)		11-5(6)	
Little Falls (US)						10-6(1)	10-3(0 9-5(3) 12-8(2
Beaconsfield Rd. (CDN)							12-8(4
Loon Bay (US & CDN)				12-6(1)	9-5(0)	11-6(0)	10-6(0 9-5(7) 9-5(3) 11-6(6
Gleason Point (CDN)							
Squirrel Point (US)					9-5(2)		
Grand Falls Flowage Rd. (US)							
Grand Falls Dam (US & CDN)	9-5(1)			9-3(0)		9-5(3) 12-6(0)	12-8(6 9-12(0
Princeton (US)		11-5(0)			12-6(0) 9-5(2)		
Woodland, Maine (US)	9-5(1)				12-5(3) 12-6(5)		
Milltown (US & CDN)	12-8(1)	11-5(2)			12-6(0)		

*9-5: 9 a.m. to 5 p.m., etc.

**( ): number of field interviews completed.

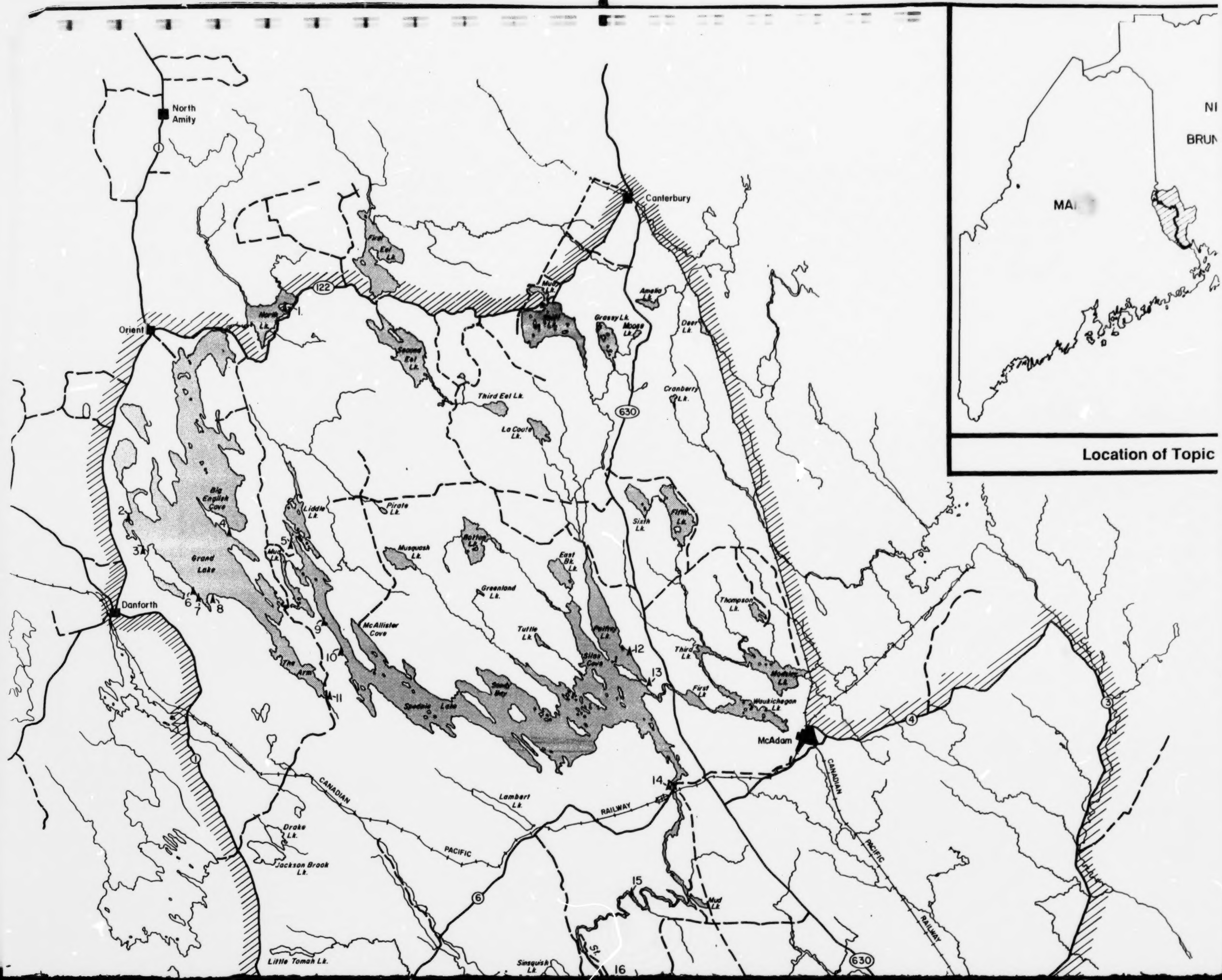
APPENDIX VI

ST. CROIX WATERWAY RECREATION AREA
RECREATIONAL USE SURVEY - 1986

DIRECTIONS: Please complete the following form as best as possible without having to interview recreational visitors. Please use a new form each day. If you are completing this form at either Spednic Lake Provincial Park or North Lake Provincial Park, please do not include overnight campers in the park. We are interested in only those people who use the park as an access/exit point to the St. Croix Waterway Recreational Area.

LOCATION: ______________ MONTH: ______________ DAY: ______________ DATE: ______________

TIME OF DAY	NUMBER IN TRIP PARTY	PARTY COMPOSITION - alone - family - adults only - organized group	RECREATIONAL ACTIVITIES THE PARTY PARTICIPATED IN (by observation) - fishing - kayaking - canoeing - etc.	TYPE OF WATERCRAPT USED - canoe - canoe with motor - kayak - sailboat - sailboard - boat with 9.9 hp or less - boat with 10 hp or more - boat with no motor
Morning				
Afternoon (12 pm - 6 pm)				
Evening After 6 pm				


North Amity
Orient
Danforth
Canterbury
McAdam
First Eel Lk.
Second Eel Lk.
Third Eel Lk.
North Lk.
Mud Lk.
Skiff Lk.
Amelia Lk.
Grassy Lk.
Moose Lk.
Deer Lk.
Cranberry Lk.
La Coote Lk.
Big English Cove
Grand Lake
The Arm
Liddle Lk.
Mud Lk.
Pirate Lk.
Musquash Lk.
Bottle Lk.
Greenland Lk.
East Bk. Lk.
Sixth Lk.
Fifth Lk.
Thompson Lk.
Tuttle Lk.
Palfrey Lk.
Silas Cove
Third Lk.
First Lk.
Waukichagan Lk.
McAllister Cove
Spednic Lake
Sand Bay
Lambert Lk.
Drake Lk.
Jackson Brook Lk.
Little Tomah Lk.
Sinsquish Lk.
Mud Lk.
CANADIAN PACIFIC RAILWAY
CANADIAN PACIFIC RAILWAY
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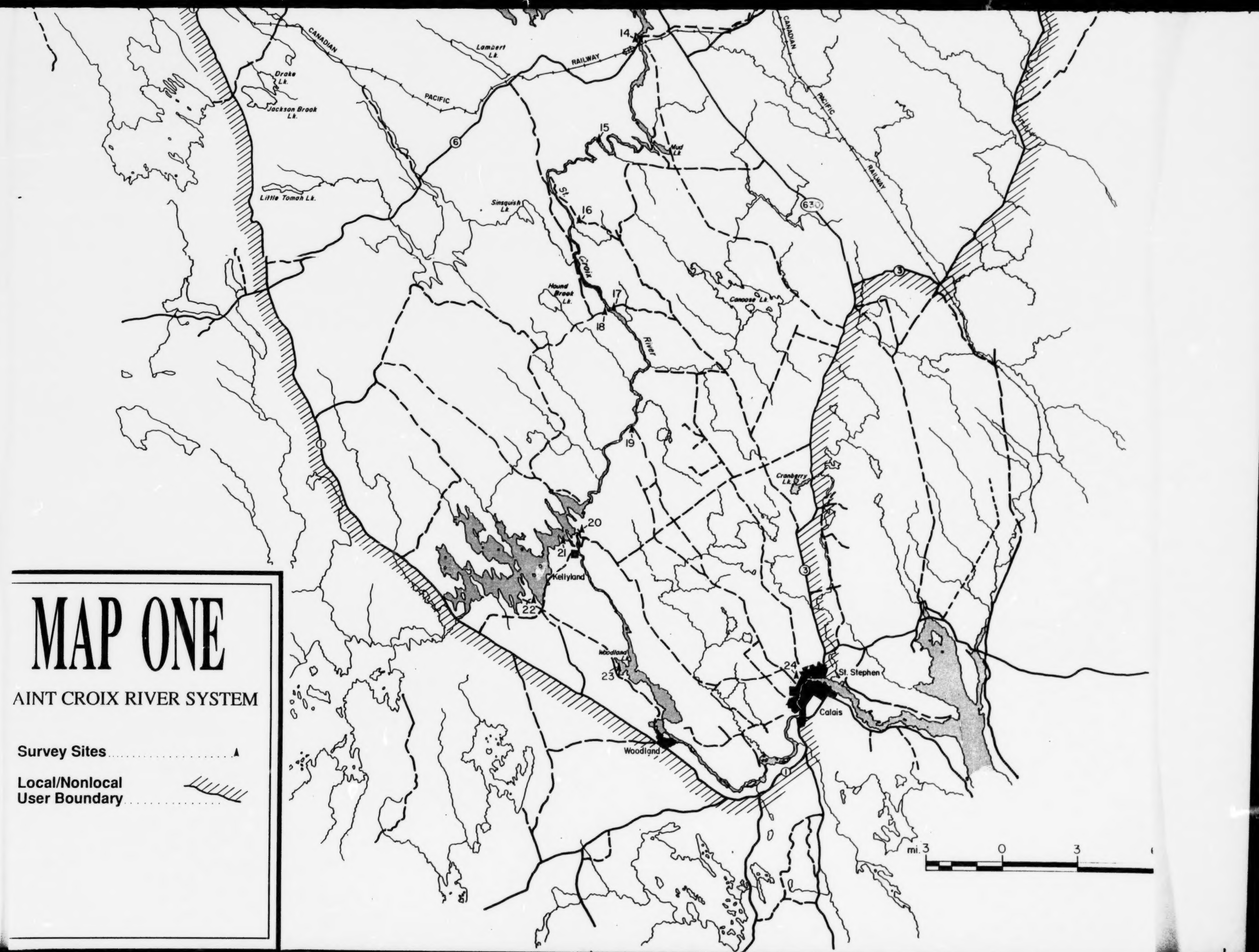
Location of Topic


CANADIAN PACIFIC RAILWAY
CANADIAN PACIFIC RAILWAY
Lambert Lk.
Drake Lk.
Jackson Brook Lk.
Little Tomah Lk.
Sinsquish Lk.
Mud Lk.
Hound Brook Lk.
Canoose Lk.
Cranberry Lk.
St. Croix River
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16
17
18
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22
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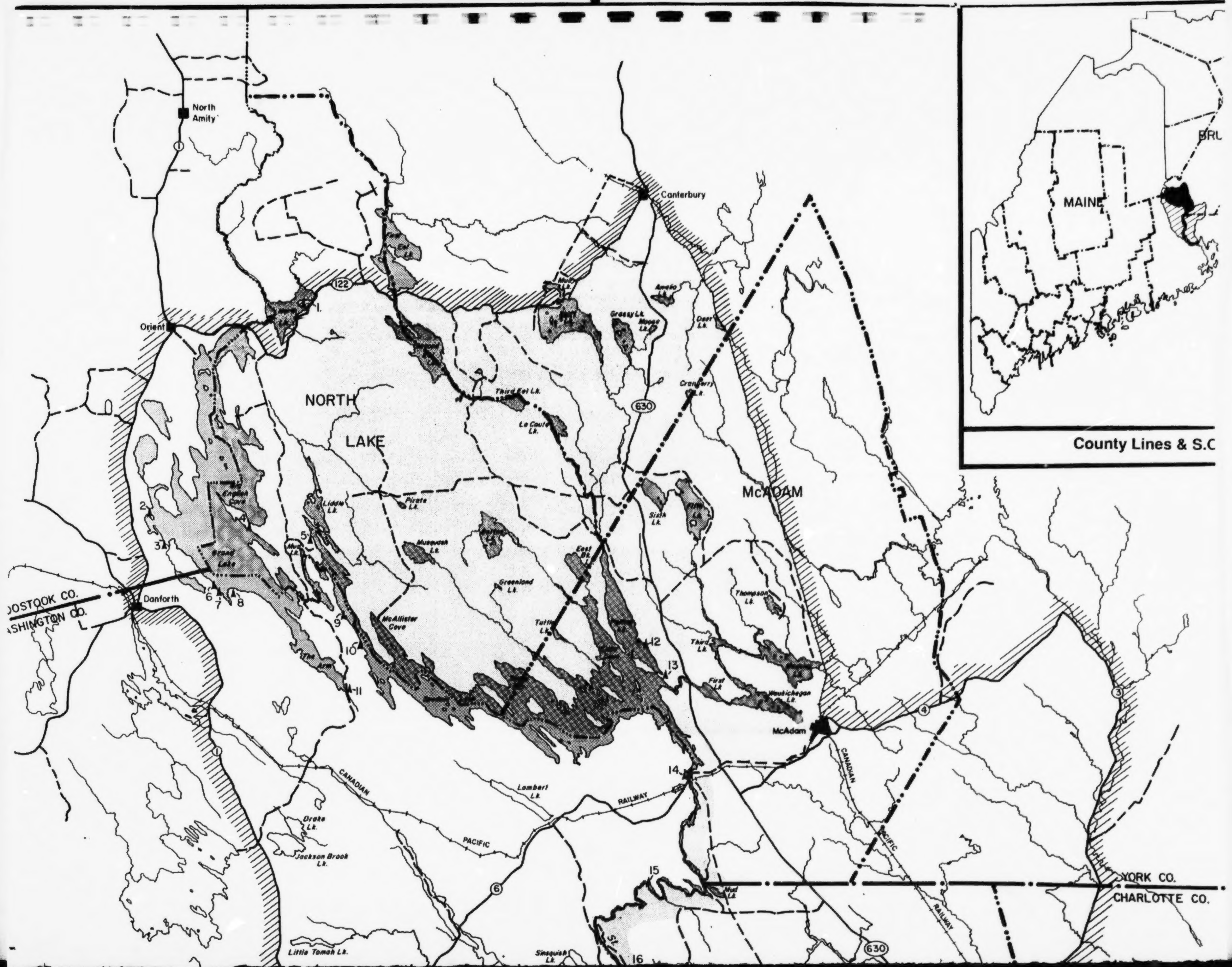
630
Kellyland
Woodland
Woodland
St. Stephen
Calais
mi. 3
0
3

MAP ONE

AINT CROIX RIVER SYSTEM

Survey Sites ▲

Local/Nonlocal User Boundary ▨


North Amity
Canterbury
Orient
122
1.
NORTH
LAKE
McADAM
Eel Lk.
Third Eel Lk.
Le Coute Lk.
Mud Lk.
Grassy Lk.
Moose Lk.
Amelia Lk.
Deer Lk.
Cranberry Lk.
630
Big Englishman Cove
Broad Lake
Liddle Lk.
Pirate Lk.
Mud Lk.
Musquash Lk.
Greenland Lk.
Sixth Lk.
Fifth Lk.
East Bk.
Tuttle Lk.
Thompson Lk.
Third Lk.
First Lk.
Wauklehegan Lk.
McAllister Cove
The Arm
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
McAdam
AROOSTOOK CO.
WASHINGTON CO.
Danforth
CANADIAN
PACIFIC
RAILWAY
CANADIAN
PACIFIC
RAILWAY
Lambert Lk.
Drake Lk.
Jackson Brook Lk.
Little Tomah Lk.
Sinsquish Lk.
Mud Lk.
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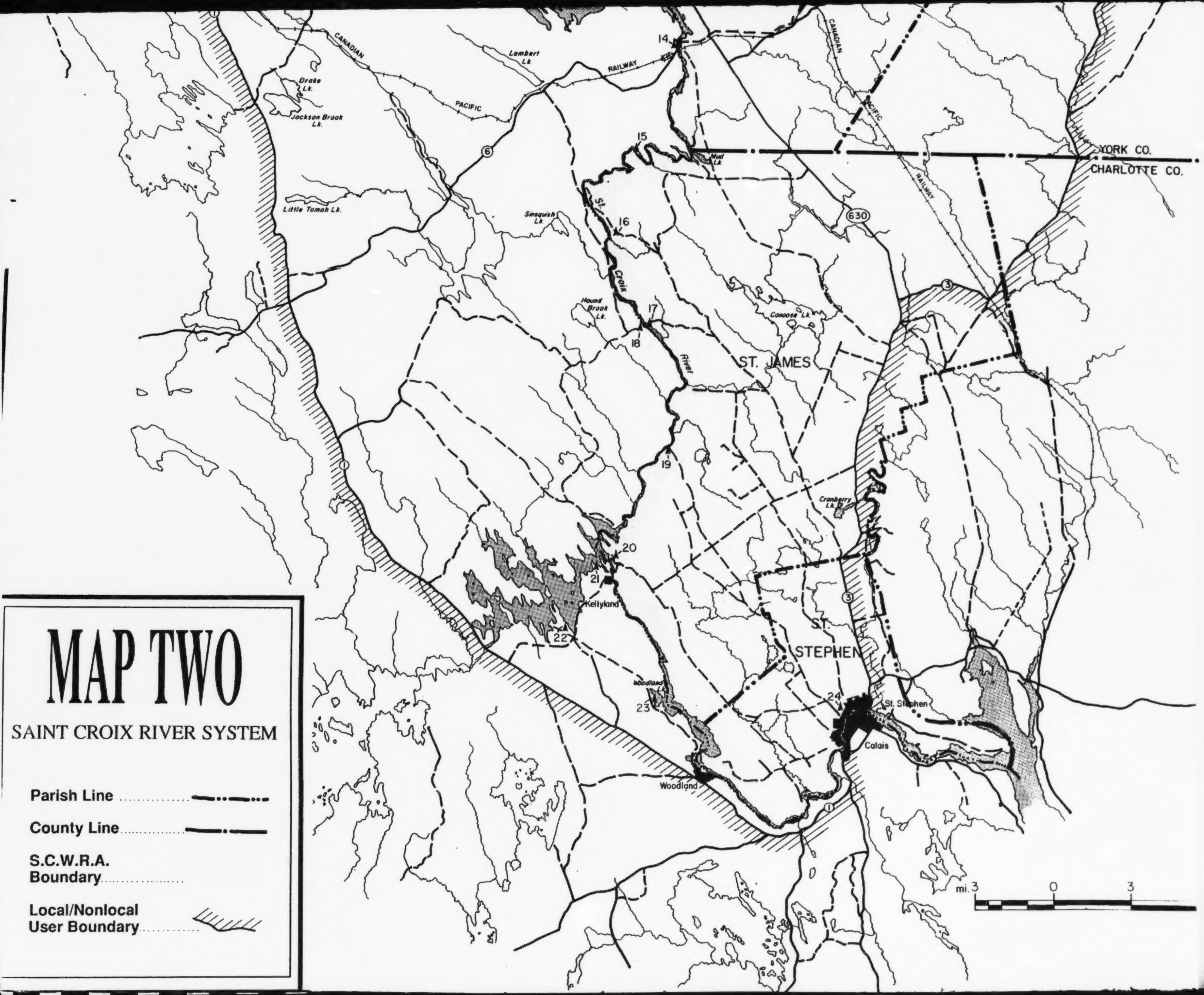
YORK CO.
CHARLOTTE CO.
MAINE
BRU
County Lines & S.C



MAP TWO

SAINT CROIX RIVER SYSTEM

Parish Line
County Line
S.C.W.R.A. Boundary
Local/Nonlocal User Boundary
CANADIAN PACIFIC RAILWAY
CANADIAN PACIFIC RAILWAY
Lambert Lk.
Drake Lk.
Jackson Brook Lk.
Little Tomah Lk.
Sinsquish Lk.
Hound Brook Lk.
Mud Lk.
Canoose Lk.
Cranberry Lk.
St. Croix River
ST. JAMES
ST. STEPHEN
YORK CO.
CHARLOTTE CO.
Kellyland
Woodland
Woodland
St. Stephen
Calais
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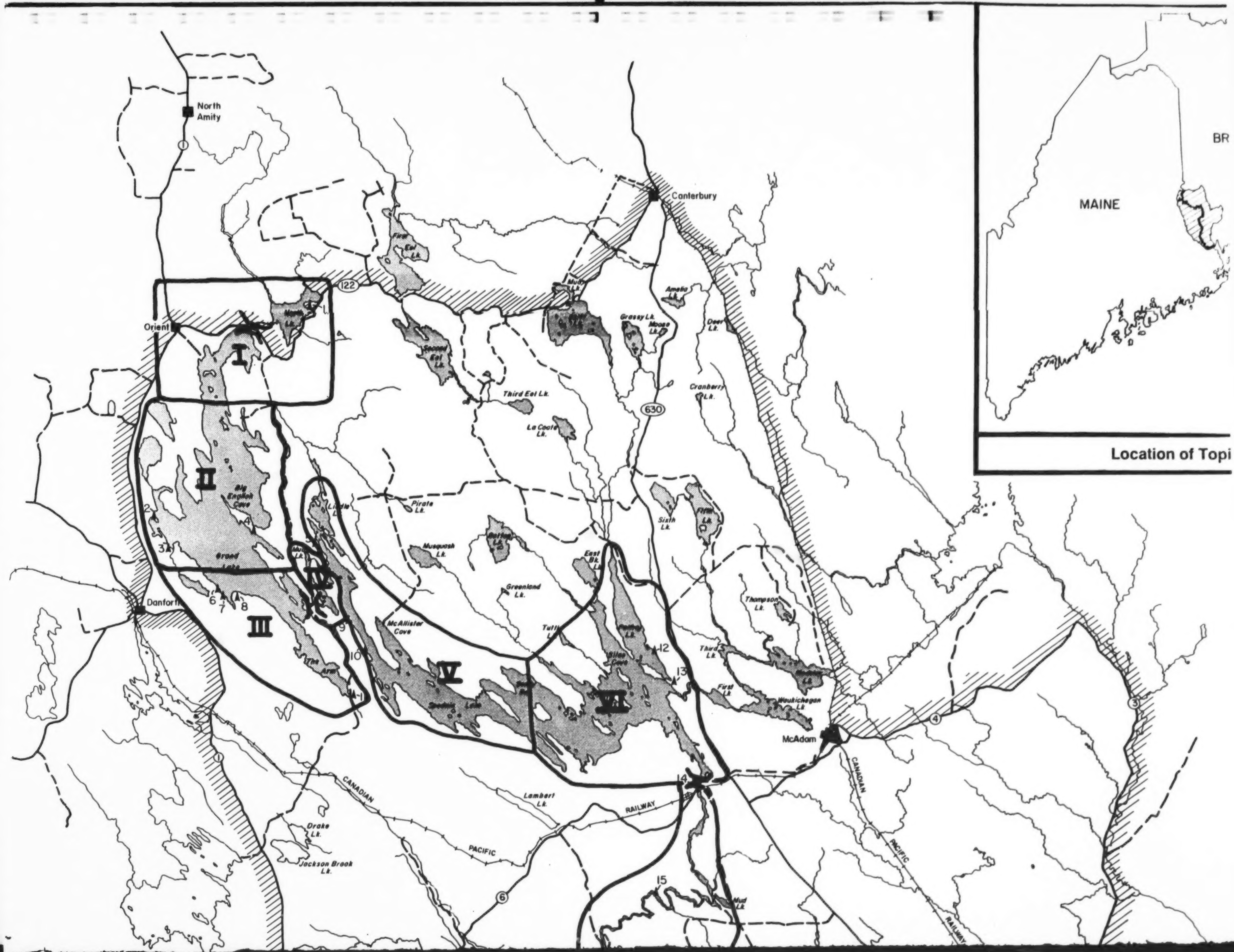
North Amity
Orient
Canterbury
Danforth
McAdam
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First Eel Lk.
Second Eel Lk.
Third Eel Lk.
La Coote Lk.
Mud Lk.
Grassy Lk.
Moose Lk.
Amelia Lk.
Deer Lk.
Cranberry Lk.
Sixth Lk.
Fifth Lk.
Pirate Lk.
Musquash Lk.
Greenland Lk.
East Bk. Lk.
Tuttle Lk.
Thompson Lk.
Third Lk.
First Lk.
Waukichegan Lk.
Little Lk.
Big Englmóh Cove
Grand Lake
The Arm
McAllister Cove
Spednic Lake
Lambert Lk.
Drake Lk.
Jackson Brook Lk.
Mud Lk.
CANADIAN PACIFIC RAILWAY
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II
III
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MAINE
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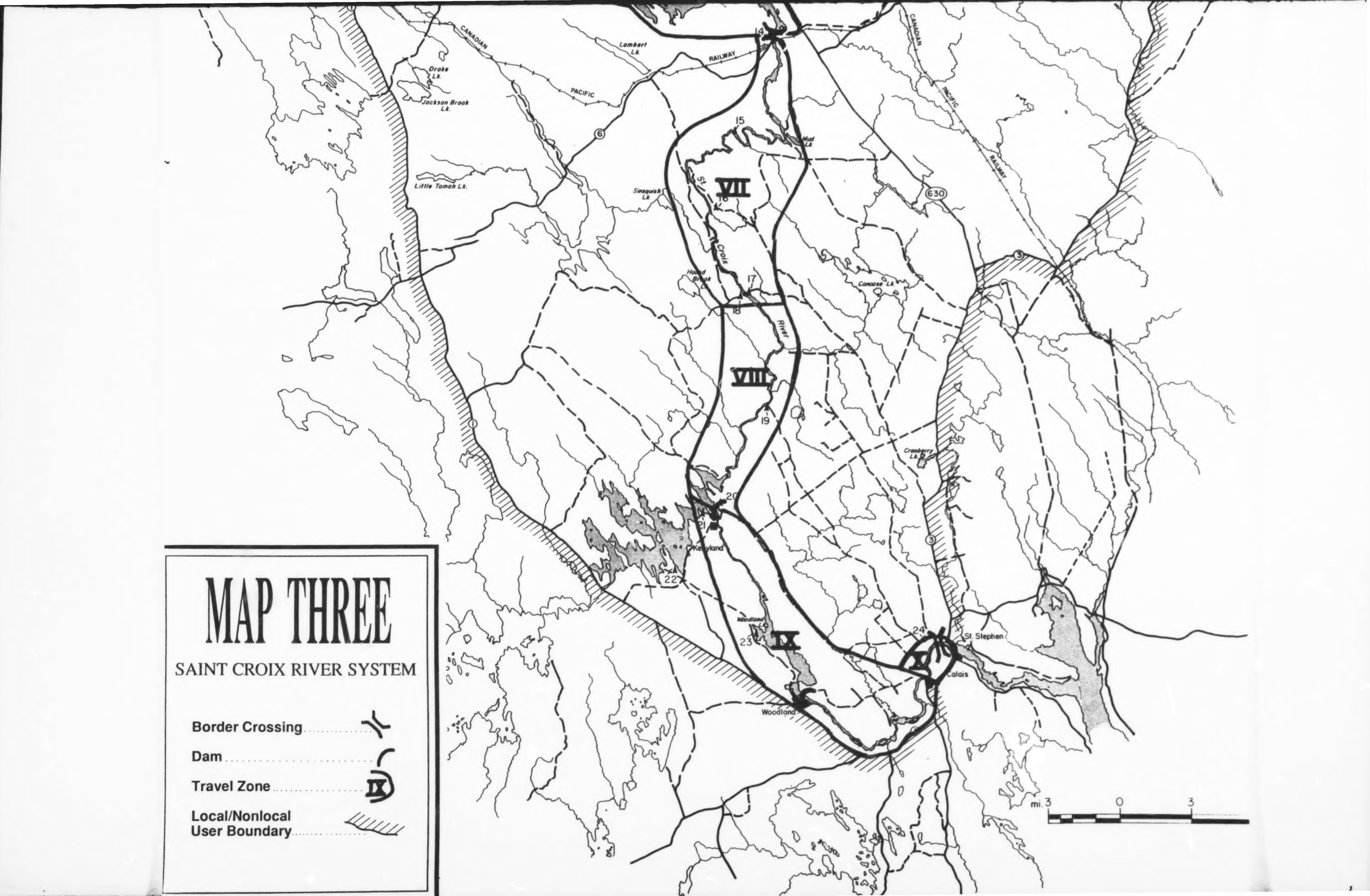
Location of Topi



MAP THREE

SAINT CROIX RIVER SYSTEM

Border Crossing
Dam
Travel Zone
IX
Local/Nonlocal User Boundary
CANADIAN PACIFIC RAILWAY
Lambert Lk.
Drake Lk.
Jackson Brook Lk.
Little Tomah Lk.
Sinsquish Lk.
Mud Lk.
St. Croix River
Hound Brook Lk.
Canoose Lk.
Cranberry Lk.
Kellyland
Woodland
St. Stephen
Calais
VII
VIII
IX
X
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